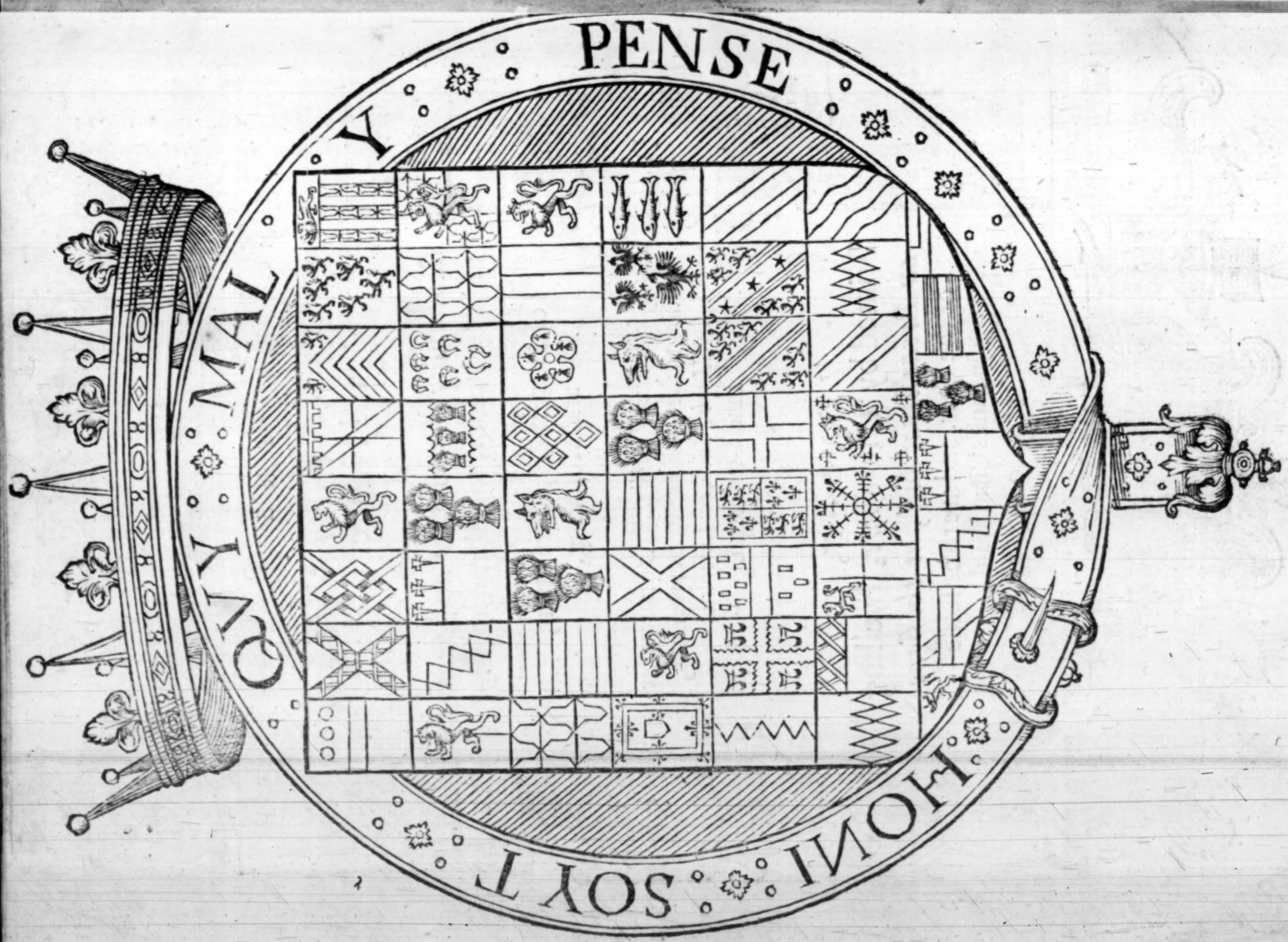
THE *Jewell House of Art* and Nature.

*Conteining diuers rare and profi-*table Inuentions, together with ſundry new experimentes in the Art of Husbandry, Diſtillation, and Moulding.

Faithfully and familiarly ſet downe, according to the Authors owne experience, by *Hugh Platte*, of Lincolnes Inne Gentleman.

LONDON,
Printed by *Peter Short*, dwelling *on Breadſtreat hill*, *at the ſigne* of the Star, and are to be ſolde in Paules Churchyard.
1594.


PENSE
MAL Y
HONI SOY T

¶To the right Honorable, Robert *Deuorax Earle of Eſſex and Ewe*, Vicount of Hereforde, Lorde Ferrer of Chartley, *Borcher, and Louayne, Maſter of the Queenes Maieſties* Horſe, Knight of the noble order of the Garter, and one of her Maieſties Honorable priuie Councell, *Hugh Platte* wiſheth a long and happy life, with encreaſe of Honour and vertue.



When I conſider with my ſelfe (righte honourable) that the trew end of all our priuat labors and ſtudies, ought to bee the beginning of the publike and common good of our country, wherein we breath and haue our being: I holde my ſelfe partely bound by the law of nature, & partly by the neceſſity of the times, to diſcloſe and manifeſt, euen thoſe ſecret and hidden magiſteries, both of art and nature, which I had long ſince enterred in a caſe of marble, and are now (fearing ſome patent of concealements) ready to breake out of their tombes, and to pleade their owne tenures. And becauſe in theſe daies of deepeſt

cenſure, ech author of nouelties (be they neuer ſo really, & roially performed) is euery way in danger both of ſharp, and ſodaine reprehention, not onely of the baſe & vulgar ſorte of people, that meaſure other mens conceipts by their owne; but of thoſe alſo that haue had ſome better education, and been brought vp euen in the ſame ſchooles, yea and vnder the ſame Tutors with them. I am therfore bold (preſuming vpon your honorable & accuſtomed fauors towardes all true louers of Art & learning, to deuote & conſecrate vnto your honorable protection, the painefull and chargeable trauells of my youth, not doubting but that being ſhrowded with *Achillis* ſhield, they ſhal be able to endure al the thundring volees of ſhot whatſoeuer, that ſhall be bent or diſcharged againſt them. And thus reſting ſecure vnder the ſhadow of ſo honorable a Patron, & hoping that your honor will inſpire ſome life into theſe breathleſſe ghoſts of mine, which are thought to bee dead, and rotten longe ſince within the graues of obliuion: and wiſhing the ful accompliſhment of all your godly & honorable deſires, crauing pardon for my bold enterpriſe at this time, I reſt.

Your honors in al duty to command.

Hugh Plat.

The first Booke conteineth, diuers new and conceited experiments, from the which *there may be sundry both pleasing and profitable* vses drawne, by them which haue either *wit, or will to applie them.*

1 SOndry new and artificial waies for the keeping of fruites and flowers, in their fresh hew, after they are gathered from their stalks or branches.

2 A perspectiue ring, that will discouer all the cardes that are neere him that weareth it on his finger.

3 How to carrie gold in a most secret manner.

4 How to keepe or preserue any foule, or other peece of flesh, sound and sweet, the space of three weekes, or one whole moneth togither, notwithstanding the contagiousnesse of the weather.

5 How to defend fresh water a long time from putrifaction.

6 A marchants compasse, wheereby he may know vpon what point the wind blowes, in his bedchamber, and in the night time, without beholding the skie, or any vane abroad.

7 How to feed and fatten hens, chickens, geese, ducks, &c. in a more cheap manner, then hath as yet beene made knowne, or common to the world,

8 How to write a letter secretly, that cannot easilie bee discerned, or suspected.

9 How to brew good and wholesome beere without any hops at al.

10 How to harden leather, so as the same shall last much longer in the suckers of pumps, then it doth vnprepared.

11 A conceited chafingdish, to keepe a dish of meat long hot vpon the table, without any coles therein.

12 How to roast meat more speedilie and with lesse fire, then wee doo in our common manner.

13 To make a new peeee of Walnut tree or Wainscot, to be of one selfe same colour with the old.

14 How to turne fiue spits with one hand, whereby also much fire is saued.

15 A probable coniecture at the composition of hard wax.

16 To helpe venison that is tainted.

17 A pistol of two foot in length, to deliuer a bullet point blanke at eight skore.

18 A peece whereby to performe ſome extraordinary ſeruice.
19 *To* make greene wood to burne cleere, at the further end of the Ouen.
20 How to walke ſafely vpon an high ſcaffolde, without any daunger of falling.
21 A round ball of copper to blow the fire with.
22 How to erect or build ouer any brooke, a cheape woodden bridge, of forty or fifty foot in length, without faſtening of any tymber worke within the water.
23 A cheape Lanthorne to carry a light in any ſtormy weather, without any defenſatiue before it.
24 To plum vp an horſe to keepe him from tiring in his trauell, and to make him foame at the bit.
25 A drinke for trauellers to bee made *Extempore*, when they want good beere or ale, at their Innes.
26 How to endure ones hand in molten lead.
27 To hold an hot iron barre in a naked hand.
28 Sweet cakes made without either ſpice or ſuger.
29 One candle to make as great a light as two or three.
30 Timber made to laſt long in water workes.
31 To cloſe the chops of greene timber.
32 To graue any deuiſe vpon an egge-ſhell, and to thorough cut the ſame.
33 An apparance of ſtrange formes in a glaſſe.
34 Inke to be carried in the forme of a powder.
35 To write both blew and red letters at once.
36 Inke kept from freezing and molding.
37 How to draw any patterne by a deske of glaſſe.
38 Helps for the ſpeedy attaining of the ſecretary hand.
39 To helpe Inke when it waxeth thicke.
40 To renew olde letters that are almoſt worne out.
41 To ſpeake by ſignes onely.
42 Limming with colours drawne from flowers.
43 A ready way to learne the A B C.
44 To graue and inlay colours into al the mettals.
45 To make bad paper to beare inke.
46 To make an egge to ſtand alone without any helpe.
47 To harden the white of an egge into a gum.
48 A cheape candle or lampe for poore folks.
49 To refreſh the colours of old oile pictures.
50 An excellent cement for broken glaſſes.
51 To drie gunpowder without danger of fire.
52 To draw fiſh to a certeine place in the night by a candle.
53 A baite to catch fiſh with.
54 To draw fiſh into a tramell.
55 Diuers good baits to catch fiſh with.

56 A ready way to catch pigeons.
57 A worme to catch birds with.
58 To catch crowes, iackdawes, &c.
59 To kill Seapies, Seaguls, &c.
60 To gather Waſpes.
61 To keepe garments and hangings from moath eating.
62 To helpe beere that ſowreth or is dead.
63 To helpe a chimnie that is on fire preſently.
64 To haue Seafiſh all the yeare long.
65 To make beere ſtale quickly.
66 To ſteale bees.
67 To make a tallow candle laſt long.
68 How to tell the iuſt number of Apples, nuts, ſhillings, &c, as they ly in bulke together.
69 To preuent drunkenneſſe.
70 An excellent tent for a Diamond.
71 Oyle or verniſh made to dry ſpeedilie.
72 To fetch out any ſtaine.
73 To helpe wine that reboyleth.
74 How to make Bragget.
75 Clarifieng of hony in an excellent manner.
76 To make an artificiall Malmeſie.
77 To keepe Gaſcoigne wine good, a long time.
78 To keepe Walnuts good and moiſt, a long time.
79 To preſerue the gloſſe of Spaniſh leather.
80 To helpe ſmoking chimnies.
81 Tinder and matches ſweet, and of a new kind.
82 An excellent mixture to ſcoure pewter withal.
83 To defend a horſe from flies in his trauell.
84 To kill Rats in a garner.
85 To take away the offence of noiſome vaults.
86 Sweet and delicate dentifrices, or rubbers for the teeth.
87 To helpe horſe and man that is tender footed.
88 To keepe oyſters good ten or twelue daies.
89 To keepe Lobſters, Crayfiſhes, prawnes, &c. good, and ſweete, ſome reaſonable time.
90 To make ſmooth or gliſtering floores or wals.
91 To make parchment tranſparent.
92 A cheape morter to be vſed in buildings.
93 A conceited drinking glaſſe.
94 To diſſolue gold, and to part the ſame from gilt ſiluer.
95 To know when the moone is at the full by a glaſſe of water.
96 To melt downe iron eaſilie.
97 To put ſeuerall wines in one glaſſe.
98 The Art of memorie.
99 To make a conceited proiection either vpon Sol or Luna.

100 To nip a glaſſe, Hermetice.
101 A Waggon to be drawne with men.
102 A delicate ſtoue to ſweat in.
103 The Art of refining of Suger.

The ſecond Booke entreateth of ſundrie newe ſortes of ſoyle or Marle, for the better manuring of paſture or arable groundes, with diuers conceits of Husbandry not heretofore publiſhed.

The third Booke conteineth, diuers chimicall concluſions, concerning the Art of Diſtillation, with many rare practiſes and vſes thereof, according to the Authors owne experience.

The fourth Booke conteineth, the Art of molding, or caſting of any liue bird, or little beaſt, heatbe, or flower, or of any patterne of mettall, wax,&c. into golde, ſiluer, plaiſter,&c.

The laſt part, is an offer of certeine new inuentions, which the Author wil bee ready to diſcloſe vppon reaſonable conſiderations, to ſuch as ſhall be willing to entertaine them, or to procure ſome priuiledge for them,

FINIS.

THE PREFACE OF THE Author.

BEcause in my late *Apologie of certeine newe Inuentions* (*which I haue thought good as* individua *of one and the selfe-same* Species, *to annex and combine with this conceited Treatise*) *I made a condicionall promise, of some farther discouerie in artificiall conceipts, then either my health or leisure would then permit: I am now resolued* (*notwithstanding the vnkind acceptation of my first fruits which then I feared and hath since falne out, is a sufficient release in Law of the Condition*) *to make the same in some sort absolute* (*though not altogether acording to the fulnesse of my first purpose*) *and to become a building word vnto me. And I am the rather perswaded hereunto, that I might both second my first labours with a fresh supplie of credit, as also for the better satisfaction, or rather suppression of all those professed enemies of ingenious deuises, who notwithstanding those manifold and inauoidable testimonies produced in the same Apologie, for the better supportation of such offers as are therein most sincerely propoũded, and doe yet rest at all times* (*vpon reasonable condicions*) *to be as royallie performed, doe neuertheless without all wit, reason, or humanitie, not onely make a question of the possibility of them, but as occupying the seats of Iudgement,* (*whereas some of them haue as yet bin scarselie Scauengers in the Warde, many of them not yet come to a face of Foines, most of them vnderstanding no more Latine then* Nouerint vniuersi, *and none of them able to moderate a Logique question in the Sophisters schooles*) *haue both vtterlie condemned*

them in their owne conceipts, and pronounced their fatal ſentence vpon thē, in the midſt of much ſacke & ſugar. Yet herein I muſt of neceſſitie allowe of their graue wiſedoms, who being not able to rule their raſh and riotous tounges, haue alwaies ſhewed ſo great a gouernment ouer their enchanting purſes, as that at al times when the queſtion came to be tried by any round wager (which hath beene oftentimes offered them in my behalfe, and ſhal ſtil bee maintained in deſpight of their ignorance) they haue preſentlie ſhifted themſelues by an Apoſtrophe to a new matter, as if they had ſpoken vnawares they knew not what.

Now I ſee that ſaying of Hierome *to be verified in our daies.* Nil tam facile, quam otioſum et dormientem de aliorum labore & vigilijs diſputare. *There is nothing, ſaith* Hierome *) more eaſie then for him that is idle and ſluggiſh himſelfe, to argue and reaſon vpon other mens labours and watchings. But to leaue theſe leaden daggers with their golden ſheathes to the Cutlers ſhops, where they would make a goodlie ſhew, if they were hung vp in a Michaelmas Terme, let vs ſee (ſince the former ages haue brought forth and perfected, ſo manie rare and ineſtimable inuentions for the vſe and benefit of man) what cauſe we haue to deſpaire in our wits who are alreadie ful fraught & furniſhed with their induſtrious labors, and yet haue the benefit and aduantage of our owne conceiptes to multiplie al thoſe learned lines which they haue left behind them. Why then ſhould we think ſo baſelie of our ſelues and our times? Are the pathes of the auncient Philoſophers ſo worne out or ouergrown with weeds, that no tract or touch therof remaineth in our daies whereby to trace or follow them? or be their labyrinths ſo intricate, that no* Ariadnes *thread wil wind him out that is once en-*

entred? I cannot think, much leſſe beleeue, that Nature hath dealt ſo niggardly with al the world beſides, as firſt to make her ſtaples and ſtorehouſes of skill and learning, onely within Aegypt or Greece, and then alſo to cut off al trade and traffique with them from all other Nations. Nay rather, why ſhould not little England (whoſe Angli are ſo called quaſi Angeli *in the opinion of ſom that are learned, and for whoſe good, the great and mightie Iehouah, hath opened euen the windowes of Heauen and powred downe ſuch plentie of his richeſt bleſſings) ſeeke to raunge her ſelfe in the foremoſt rankes and troupes of all* Mineruaes *crew, and not onlie reach with a victorious arme at the golden fleece, in deſpight of all the* fierie Buls of Theſſaly, *but alſo wreſt and wring the victorie, euen out of the victors hands.*

And were it the good will and pleaſure of her moſt ſacred Maieſtie (who with a moſt princelie and proſperous hand, hath hitherto borne vp hir ſword and ſcepter in deſpight of all her forren and domeſtical foes) to propound ſome liberall ſtipende for all ſuch of her ingenious Subiects as ſhould bring forth any profitable or rare particular, for the general good of his prince and Country, I would hope to ſee a new reuolution of the firſt golden age, and that ſome Polydor *would be forced to write a freſh volume of new Engliſh Authors, which ſhould make the antient Poetical Gods to be their foiles, and to yeelde vp both their crownes and Scepters vnto them. But now I may iuſtlie ſaie vnto* England, *O thou little Iſland, were either thy manifeſt wants, or thy ſecret and hidden treſures ſufficientlie knowne vnto thy ſelfe, thou wouldeſt then as earneſtly embrace the one, as thou dooſt now inſenſiblie paſſe ouer the other: yea thou ſhouldſt neither enuie* Spaine *for hir riches, nor flatter her for her commodities, nor feare her for all the inuincible Nauies that*

ſhe could prepare and ſet forth againſt thee. I dare boldly ſay and conſtantlie affirm, that as our country dooth affoord many carefull fathers that dailie perform their beſt endeuours for the weale publike, and many heroicall and martial men, whoſe vndaunted corages haue ſufficiently manifeſted themſelues, both at home & abroad, ſo yet there remaine a ſecret number of choice wits, who being full fraught of more neceſſarie, yea more inualuable commodities, then either the Eaſt or weſt Indies are able to affoord, are neuertheles forced to conſume their daies in melancholie, & (almoſt to the hazard of their ſoules) to burie their talents in the bottomles pit of obliuion. Sed quid ego hæc vobis nequidquam ingrata reuoluo? Dies dabit, quod dies negat. *And there I will caſt my anchor for this time. Now to the ſubiect we haue in hãd.*

It may ſeem a matter right ſtraunge and admirable to al the excellent Artiſts of our age, that a yong Nouesſe in the ſchools of Philoſophie, a ſlender Husbandman in the rights and culture of the ground, a man of ciuill education, that hath drawn the longeſt line of his life within the liſts and limits of London, ſhould now (in theſe floriſhing though vnrewarded daies of skil & knowledge, & after ſo many editions of ſuch excellent Authors concerning the ſame ſubiect) preſume to bring forth a volume of new inuentiõs, whoſe nouelty might delight the delicat eares of a few, and whoſe profitable practiſe might ſufficiently ſatisfie both the labor and expectation of many thouſãds. But when I conſider with my ſelfe, that the God of Nature and knowledge (when it pleaſeth himſelfe to vſe his own meanes) is bound to no age, profeſſion, or eſtate, and that the beſt wits of our time, are fallen into a deep ſlumber, or rather into a deadly ſleepe, by an exceſſiue doſe of Anodinum ſpecificum *which they haue greedily ſwallowed that they might the better paſſe ouer theſe ingrate*

full

full and barbarous daies in extream silence and obliuion, I am the bolder I say (taking the aduantage of the time, and being vrged by the great & manifold wantes of my country, that dayly present themselues, & cal and cry for help at their hands, who haue or can find out any meanes of succor or releefe) to offer and present vnto my country amongst many other delightful and pleasing experimēts, some profitable practises both of Art and Nature, and amongst those, some being also of such kind and qualitie as might best sort, the most painfull, the most poore, and the most necessarie members of this land, that therby I might bring that good and commendable purpose of Virgill *to some measure of perfection,* vt quamuis auido parerent arua Colono, *and so conclude also with the* Poet, Gratum opus Agricolis. *For what eie doth not pitty to see the great weaknes and decay of our ancient and common mother the earth, which now is grown so aged & striken in yeares, & so wounded at the hart with the ploughmās goad, that she beginneth to faint vnder the husbandmans hand, and groneth at the decay of hir natural* Balsamū. *For whose good health and recouerie, and for the better comfort of sundry simple and needie farmors of this land, I haue partly vndertaken these strange labors, altogither abhorring from my professiō, that they might both know and practise some farther secrets in their husbandry, for the bētter manuring of their leane and barren groundes with some new sorts of marle not yet knowne, or not sufficientlie regarded by the best experienced men of our daies, or the most religious worshippers of the Goddesse* Ceres. *In which discourse, as the rustical people & plain clouted shooes, shal happily find som varietie of soile in sundry places where their ordinary dung doth faile them, so those which are ingenious, may gather philosophical matter enough, to stirre vp their sharpe wits to a higher con-*

templation of Nature, then the bare letter dooth import.
And because neither Albertus Magnus, Alexis of Piemont, Cardanus, Mizaldus, Baptista Porta, Firouanta, *nor the rest of that Magical crew, nor yet* Wickerus, *that painefull gatherer and disposer of them all, should here be obiected as a matter of terror vnto al new professors of rare & profitable inuentions, I haue thoght good (for the better satisfaction of the wiser sort) in a word or two to set downe some of the wants of those ancient Authors (for what one man could euer attaine to al things in their ful perfection) which no doubt are left for the* Neoterici *and later writers of our age to supply & furnish. First of al I doo find the most of these Authors in Latine, French, or Italian, wherby the vulgar sort of people, who haue most need of some profitable inuentions to helpe them, can not possiblie put them in practise, although al which they haue written had bin true. Second*
2. *lie for that I think that most of their friendes and followers (although good Latinists) doo nowe at length suspect and charge many of them with much vntruth in their best and most especiall receipts, although in matters of ordinarie distillation, sublimation, calcination, &c. of their Arsenick, Antimonie, Mercurie, and the rest of the seuen bodies in their violent maners, and for those grose vses wherin they are most emploied, as also in their handling of bewties, coulours, perfumes, and such like, manie of them haue dealt faithfully enough, although not so ful lie, but that they may well endure some newe additions both in matter & in the maner of their discourse. Third*
3 *lie, some of them hauing written diuers particulars, only by a theorical and speculatiue kind of contemplation, and not drawne from the infallible grounds of practise, haue published whole Volumes by imagination onely, in their priuate studies, which when they come to be tried either*

in

in the glowing forge of Vulcan, *they vaniſh into ſmoake, or to be committed to the earth the common mother of al inferiour creatures, they bring forth nothing elſe but ordinary fruit, not anſwereable either to their promiſes or to our expectations. Others are ſo aſtronomicallie conceipted in their rare and admirable magiſteries, which they intreat of, as that if the practiſer being very religious both in the letter and ſenſe, & yet not performing the ſecret when hee hath doone his beſt, they would perſwade vs that he hath not made his true election of the ſeaſon and planetarie houre wherin to actuate ſo great a myſterie. But the beſt and moſt approoued Authors of the reſt, haue written al their learned experiments ſo figuratiuelie, and wrapped them vp in ſuch clouds of skill (and that maketh them ſo often to tel vs,* Scribimus nobis & Philoſophis, ſcribimus filijs artis, *calling their minerals by the name of* Aurum noſtrum, mercurius noſter, ſtibium noſtrum, &c *) as that no man, without a manuel maiſter that may euen lead him by the hand thorough al their riddles, is able either to make the ſweete oile of Antimonie, or to dulciſie Mercurie as it ought to be, or to bring any mettal to be medicinable by making it irreducible to it ſelfe. Here hence it commeth to paſſe that the moſt part of our chimical and paracelſian practiſers, not being able to open thoſe faſt locked bodies of the mettals, wherby to make them by many rotations ſo volatile as they ought, do therefore giue them in their groſſe Natures, with their earthy and poiſoned parts, not beeing able to make a true and philoſophicall diuiſion of thē. And yet perſwade themſelues, that they haue greatlie profited in* Hermes *ſchool, bicauſe they are able to make* Oleum ſulphuris, Oleum vitrioli, flores & vitrum antimonij, Flores ſulphuris, crocum Martis, *and manie ſorts of precipitate, and of late a* Borax chriſtalinus, *with*

their

their Anodinũ ſpecificum, *but wanting both* Oleum ſolis *and the oile of Pearle and Coral, which conſidering the maligne qualitie both of* Opium *and* Hyoſcyamus *without thoſe helpers, I knowe not with what warrant they dare miniſter the ſame ſo often as they doe. Seeing then, that al theſe ancient & new Magicians (notwithſtanding their ſtudious endeuors & ineſtimable expence both of time and treaſure) durſt neuer as yet preſume to raſe out that olde enuied ſentence* Plura latent quam patent, *being written in capitall letters, by the hande of Nature, euen in the forhead of the leaſt and meaneſt of al her creatures. Why ſhould not I, hauing ſpent ſom of my ſweeteſt hours in reading, & many of them in cõference, and more in practiſe, but moſt of al in contemplation, in regard of al my charge & trauel, aduenture as boldlie as the reſt, to commend the flowers of my youth, to the courteous view of al well diſpoſed Readers, who may either to their great good make vſe of my labors, if they haue beene wel beſtowed, or elſe by my example learn to employ both their wittes and time in a courſe more commendable for themſelues, and more profitable for their Countrey. Yet preſuming of their fauorable cenſures (notwithſtanding I muſt leaue the ſame in equal ballance for a time) & aduenturing to meaſure other mens delights by mine own, I hope I ſhal find no* Stoick *ſo ſeuere, but that I ſhall content him in ſome one particular at the leaſt (if not in the general ſubiect of my book) which he may either for his neceſſitie, or for his pleaſure be willing to embrace. But now it is high time for the prologue to giue place becauſe the Actors are at hand, who are readie to preſent ſuch choice and varietie of matter, as that notwithſtanding they may happily faile in geſture or action, yet I doubt not but that they wil either procure a friendly & thankefull plaudite, which is the moſt that I can deſire, or a moſt free & liberal pardon, which is the leaſt that I can deſerue.*

Diuerſe new and conceited Experiments, *from the which there may be* ſundrie both pleaſing and profitable *vſes drawne, by them that haue* either witte, or will to applie them.

Sundry new and artificial wayes for the keeping of fruits and flowers, in their freſh hew, after they are gathered from their ſtalkes or branches.

CAuſe new fourmes of Lead to be made, either round or ſquare, that may fit the bignes of your flower, or fruit which you meane to keep, in euerie of which fourmes place one flower, Cherrie, Plomme, or Peare, hanging by the ſtalke in ſuch maner as it grew, let theſe fourmes be well fitted with their apt couers, and ſodered verie cloſe with ſafte Soder which will runne with a ſmall heate, ſo as no aire enter, bury them deep in a ſhady place, where the Sunne may worke no penetration. Some commend a ſandie, and ſome a grauellie ground, aboue all other for this purpoſe, but if they be well ſodered, I thinke any ground wil ſerue the turne, or if you think good, you may hang them by lines in ſome coole and running brooke. Or elſe you may put euery ſeuerall fruit or flower in his ſeuerall earthen pot well

leaded within,and couered with earthen couers,well burnt & leaded likewiſe, cementing or cloſing them togither with the Goldſmiths waxe or cement,conſiſting of ſtone-pitch, roſen,powder of bricke, and ſuch like (although ſome content themſelues with molten Brimſtone,and others with yellow waxe and roſen,molten and well wrought togither.) Theſe litle pots you muſt place within greater,and theſe greater within veſſels of wood, ſtopping vp euerie breathing place that you can imagine(for here *I* can aſſure you that the aire will be a player, vnleſſe you can keepe it out of the Alley perforce.) If you would afterwardes burie theſe woodden veſſels,then were it requiſite to pitch them well,both within and without: but if you meane to place them onely in coole and freſh vaults, or Sellers, then may you verie well ſpare this defenſatiue,ſo as the caske be ſtrong and tight of it ſelf. Yet ſome commende the keeping of fruite or flowers in Glaſſes made of purpoſe for them,to be the beſt of all others,ſo as the Glaſſes bee made with long neckes, and bee nipped (*hermetice*) with a paire of whote tongs,the maner whereof you ſhall find hereafter ſet downe *num.*100. I dare not commend in anie high tearmes,the dipping of fruite in wax well tempered with ſome Turpentine, Pitch, Roſen, ſweete ſuet, or Barrowes greace: where alſo ſome woulde haue the fruit firſt wrapped in paper,to keepe it the cleaner,although I know there is ſomewhat to bee performed this way in ſome kinds of fruit which begin to rot frō the outward partes inwardly. But if the fruit begin to rot firſt at the Core(as the Katherin peare,and diuers other ſorts of fruit doe) then all the outwarde couers and encloſures whatſoeuer (yea though they were dipped in diſſolued Ambre which is counted the pu-

reſt

reſt and moſt defenſatiue garment of all the reſt) will neuer be able to turne Nature out of her bias. Here alſo ſome ſharpe wittes haue imagined that if ſpirit of wine wel rectified, were glutted with thimbibition of anie flower, vntill it coulde worke no more vpon the ſame, that thereby it were poſſible to preſerue anie flower of the ſame kinde, a long time therein. But this is to bee vnderſtoode onely of the drie leaues which bring nothing elſe but the Tincture and ſtrength of the hearbe with them, and not of the moiſt leaues which will leaue a putrifying phlegme behind them, which in time will helpe to corrupt the ſpirit. Nowe me thinkes I ſee a whole troupe of gallant dames attending with their liſtning eares, or rather longing with their great bellies, to learne ſome newfound skil, how they may play at chopcherrie, whē cherrie time is paſt. Wel, to giue theſe Ladies ſome content, I will vnfolde a ſcroule which I had long ſince as carefully wrapped vp as euer any of the Sybels did their fatall propheſies, wherein I will make them as cunning as my ſelfe (ſauing onelie that I will reſerue one ſtrange venue to foile a ſcholler withal if need be.) The ſecret is ſhort, let one element be included within another, ſo as the one may haue no acceſſe nor participate with the other. But this paraduenture is too philoſophical for women. Then receiue it Ladies with plaine tearmes into your open lappes. For want of Glaſſes with broade skirts (whereof notwithſtanding I doe thinke there are inough to bee had if you can bee ſo gracious with maſter Iacob of the Glaſhouſe) cauſe new Pewter veſſels of ſome large content to be made and of the faſhion of bell Saltſellers, with diuerſe eies or hookes hanging in the inſide, at the which you muſt faſten the Cherries, by their ſtalkes, and hang

them so as that one maie not touch an other, the skirts of which vessels you must compasse with leaden rings of such weight as may be able to presse thē downe to the bottome of some leaded panne, wherin you must place them, hauing first filled the panne almost full with fayre water prepared as is heere set downe *num.* 5. least by putrifaction of the water, the Cherryes also beginne to putrifie vvith it. Yet heere you muste bee carefull that the Cherryes hang within the ayre of these inner Vesselles, not touching the Water, which may happilie rise one inche or somewhat more within the innermost skirtes of them. And thus the ayre beeing kept coole, and defended from chaunge (vvhose alteration from heate to colde, and from moysture to drinesse, is the principall meanes of the ruinating of all mortall bodies) will preserue such Cherryes as it receyueth in charge for two whole Moneths at the least as I haue long since prooued. And peraduenture if you make choyse of sounde fruite gathered after two or three fayre dayes togither, the deaw being sufficientlie drawne from them by the Sunne, you may yet keepe them somewhat longer. But the onely pleasure of this secrete is perfourmed in Glasses through whose perspicuitie after some reasonable quantitie of water first remooued or deuided, one may discerne weekely in what plight they are. It seemeth very probable, that if Cherries as they hang vppon their braunches, and before they come to their full maturitie were included in an earthen vessell of some receipte, hauing a partie couer with a hole in the middest, deuided into two equall partes, and euerie breathing place well stopped or luted, and the Sunne sufficiently defended from the pot, that so the

the fruit would keepe freſh a long time vpon the tree whereon it groweth. This ſecrete extendeth generallie to all fruite. And it is not much vnlike to the ſpreading of a Tent ouer a Cherrie tree about fourteene dayes or three weeks before the Cherries were ripe, practiſed by a Surrey knight not many yeares ſithence, whereby he did greatly backward the tree in his bearing, now and then watering the tent in a ſunnie day with colde water, whereby the ſtrength of the Sun beames became verie weeake vpon the tree, and when he was diſpoſed to ripen them ſpeedily, he withdrew the vaile, giuing a freer paſſage to the hote and ſcorching beames of Phœbus. By the helpe of ſome one of theſe, or of ſome other of the like kinde and qualitie it was my happe to preſent vnto ſir Iohn Allet L. Maior of the Citie of London 8. greene and freſh Artichokes vpon the twelfe day, with a ſcore of freſh Orenges, which I had kept from Whitſuntide then laſt paſt, at which time I was alſo furniſhed with 200. Artichokes for mine owne prouiſion, which continued a ſeruice at my table all the lent enſuing, to the great contentment of ſundry of my gheſtes who would haue bin right glad to haue dined with the ſecret onely. It may be that at my next inpreſſion I will impart the ſame, as alſo the true & perfect ordring of the roſe tree, whereby wee may haue the flowers to bud and blow when all other roſes haue made an end of bearing. Which concluſion I haue inſerted in my conceyted booke of gardening, wherein I haue ſet down ſundrie obſeruations, which neither M. Tuſſer though hee haue written ſharpely, nor Maſter Hill though hee haue written painfully, nor Maſter Barnabe Googe though hee haue written ſoundlye, applying himſelfe in his vvhole diſcourſe both to our ſoyle and Clymate, hath as yet diſcouered to the

vvorld,

world, though peraduenture he may know them as well as I, and reſerue them for himſelfe, and for his ſecrete friendes. All which are readie for the Preſſe, and doe onely attende to ſee if Noahs Pigeon will returne with an Oliue branch, ſeeing his Rauen hath as yet brought nothing with her.

2 *A perſpectiue Ring that will diſcouer all the Cards that are neere him that weareth it on his finger.*

A Chriſtall ſtone or Glaſſe of the bigneſſe of a two pennie peece of ſiluer, or thereaboute, beeing the iuſt halfe of a rounde Baall or Globe, and cutte hollow within, hauing a good foyle ſweetlie conueyed within the concaue ſuperficies thereof, and the ſtone it ſelfe neatly poliſhed vvithin and without, will giue a liuelie repreſentation to the eye of him that weareth it, of all ſuch Cardes as his companions which are nexte him doe holde in their handes, eſpeciallie if the owner thereof doe take the vpper ende of the Table for his place, and leaning nowe and then on his elbowe, or ſtretching out his arme, doe applie his Ring aptlie for the purpoſe. I haue diſcouered this ſecret rather to diſcorage yong Noueſſes from Card-play, who by one experiment may eaſily gheſſe, how manie ſleights & couſonages, are dayly practiſed in our dicing and gaming houſes, not doubting but that the general publication thereof wil make the ſame ſo familiar with al men, as that I ſhall not iuſtly be charged of anie to haue taught old knaues newe ſchoole-pointes. This ſecrete is as yet meerly French, but it had beene long ſince either denized or made Engliſh, if there coulde haue beene found any ſufficient workman amongſt vs, that could haue

haue foyled the ſtone ſo artificially as it ought to bee. There be ſome Engliſh knights that can ſufficiently teſtifie the truth hereof by that which they haue ſeen amongſt the French gamſters.

3 Howe to carrie Gold in a moſt ſecrete maner.

MElt downe ſome Golde, and mixe therewith a ſufficient quantitie of Leade (but then you ſhall bee forced to teſt the ſame before you can recouer your Golde againe,) and this is the moſt ſecret waie of all the reſt, becauſe there will bee no ſhewe or apparaunce of Golde eyther within or without, but the ſeparation vvill bee ſomevvhat troubleſome. But if you vvoulde carrie golde about you in ſuch manner, as that vvithout anie other mans helpe, you maie deuide the Golde your ſelfe from the mettall vvherein you conuey it, then caſt bullets of Golde in a Piſtoll molde, vvhich you may ſo aptly hang vvithin ſome molde of greater boare that maie fitte the peece vvhich you carrie vvith you (vvhich vvill bee alſo a good meanes to remooue all ſuſpicion of art) as that by povvring of Leade rounde about them, they may ſerue in ſtead of coares to your greater bullets, vvhich vvith a ſmall heate are ſoone parted in ſunder. But if you vvould carrie coine, then dip your Angels or Crovvnes in molten Lead that is not ouer hote, and conuey them artlie vvithin ſome ſmall and feate Leaden vveightes, that may agree vvith the *Auer de Poiz*. Some commende the povvder of Marble, mingled with molten roſen to lap angels or other coine in, before it be through cold. There be alſo diuerſe philoſophicall vvayes for the ſecretting of *Sol* and *Luna*, but thoſe are reſerued for higher purpoſes.

How

4 *Howe to keepe or preſerue anie fowle or other peece of fleſh ſounde, and ſweete for three weekes or one whole Moneth together, notwithſtanding the contagiouſneſſe of the weather.*

MAke a ſtrong Brine, ſo as the Water bee ouerglutted with ſalt, and beeing ſcalding hote, perboyle therein the fovvle or fleſh which you would preſerue ſome reanaſoble time, that is to ſay, according to the greatnes and groſneſſe therof, then hang it vp in a conuenient place, and it will laſt a ſufficient time without any bad or ouerſaltiſh taſte, as I can teſtifie of mine owne experience. This I thought good to publiſh both for the better preſeruation of mutton, Veale, and Veniſon, vvhereof a great deale in this lande is yearely loſt, in hote and vnſeaſonable Sommers, as alſo for the benefite of our Engliſh Mariners, vvhich are forced ſometime to vittaile themſelues in ſuch intemperate Clymates, vvhere no fleſh vvill laſt ſvveet foure and twentie houres togither, by reaſon that they haue no meanes to make the ſame to take ſalt, which without all queſtion will enter this way and make penetration verie ſpeedily by reaſon of the hote and fierie ſpirite of ſalt thus prepared. Some doe vſe to perboyle their fowle, after they haue taken out the garbage, and then do dippe them in Barrowes greace, or in clarifyed Butter, till they haue gotten a newe Garment ouer them, and then they lay them one by one in ſtone pottes, filling the ſtone pottes vp to the brim with Barrowes greace or clarified Butter, wherein they doe pricke ſome Cloues, and ſprinckle dried ſalt vppon the vppermoſte face thereof, placing the pottes in ſome

ſome coole roome. Some thinke that fowle being filled ful of good wheat & after buried al ouer in wheat, will keepe good a long time. I haue alſo heard it verie crediblie reported, that a ſide of veniſon hath byn kept ſound and ſweet one whole month together, by lapping the ſame in a courſe thinne cloath, and then couering it with bay ſalt. *Qre* if it were firſt perboiled in the aforeſaid manner, and then couered with ſalt as before. I could here adde one line more, whereof euerie letter ſhould be worth an angel to diuers good houſekeepers in this Land, but that the ſame would breed both offenſe and detriment vnto others, for the which cauſe onely, I haue thought good to keep the ſame vnder hatches a little longer.

5. How to defend freſh Water a long time from putrefaction.

How to have fresh water at Sea. See Basilius or natyo. mirabere pag. 49.

THis is performed by the addition of ſome ſmall proportion of the oyle of Sulphur with it, incorporating them both togither, whereof I haue long ſince made a ſufficient triall. Some commende the oile of Vitriol to the ſame end: and ſeeing my penne hath ſo vnaduiſedly ſlipt into an Element of ſo great neceſsitie, I wil make the Sea-men a little beholding vnto me at their firſt watering, which being ſpent, I muſt leaue them to their brackiſh waters againe, vnleſſe by the helpe of ſome diſtillatorie veſſell (wherin as alſo in diuers other of the ſame kind and qualitie, I haue found maiſter Sergeant *Gowthrowſe*, the moſte exquiſite and painfull practizer and performer of our times) they can make ſeparation of the freſhe part thereof on Ship-boord. Let the owner, Marchant, or Mariner, hauing ſufficient leiſure to make his pro-

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uiſion of freſh water, before hee beginne his voiage, prepare his water in this manner. Firſt let him fill eyther ſome Rheniſh Wine fattes, ſack buts, or White wine pipes, ſuch as haue beene ſawed through the midſt, onelie with faire water, theſe halfe tubs hauing tapholes within three inches of the bottome, at the which after the water hath paſſed his firſt putrifaction, and is become ſweet againe, he may then drawe it from his reſidence into a cleane Caske, and by this meanes it will laſt much longer at the Sea than other wiſe, and yet if there were but two or three handfuls of ſalt diſſolued in a pipe of the ſame water (vvhich would not much offend either the taſt or ſtomach) it would preſerue it much more then the bare preparation of the water will doe in the aforeſaid maner. Sir *Fraunces Drake* that *Spaniſh* ſcourge & *Magnæ ſpes altera Troiæ*, who hath ſought for all the helpes which he might, either in his water or his victual, for the better comfort and reliefe of his Mariners, in one of the laſt conferences which I had with him, did aſſure me, that the moſt putrified and offenſiue vvater that could happen at the ſea, would by 24. howers agitation or rolling vp and downe, becom ſweet and good beuerage. And Captaine *Plat* in whome ſir *Frances Drake* for his good partes did alwaie repoſe great truſt and confidence, did vſuallie carrie certein long and thicke peeces of theet lead with him, which he would cauſe to bee hanged by lines at the bunghole euen to the verie center of the veſſel, wherby he did attract much of the fecicall part of the water, and the Leades would become very ſlimie therwith. This he did with often change and iteration, alwaies clenſing the leades as they grew filthie, and ſo with much adoo, he found the water a great deale more pleaſing

then

then before. Theſe fewe conceiptes I haue thought good to impart for the benefit of the whole Nauie of England, for the which I haue prouided more daintie cates, then it hath been hitherto acquainted with all, *I* doe onlie keepe them in my breaſt, vntill an honeſt purueyor may bee rewarded with ſome honeſt pencion. *Qre.* what proportion of ſpirite of Wine, or *Aqua vite* well rectified, will defende water from corruption.

6. A Marchants Compaſſe, whereby he may knowe vpon what point the wind blowes, in his bedchamber, and in the night time, without beholding the skie or any vane abroad.

FAſten a large vane, to a long yron rod, let the ſame riſe thorough the middeſt of the roofe or ſome other part, that may beſt agree with the roome wherin you mean to place the ſame, and let the yron ſtele thereof, come through the ſeeling of your chamber, and at the end of the rod, let there be a ſharpe *index*, that may point vpon a table of wood (which for that purpoſe muſt be drawne, with all the parts of the wind vpon it like a mariners compaſſe) to that wind which bloweth. You muſt haue diuers ſtaies of yron by the waie as the rodde paſſeth to keepe it vpright, hauing holes in the midſt of them, and wrought with lappets at the ſides, wherein to faſten nailes to a long poſt, which for the ſame purpoſe muſt bee placed within the garret, betweene the ſeeling of your chamber and the roofe thereof. Note that the *Index* and the edge of the vane muſt alwaies ſtand vpon two direct contraire points.

7. *How to feed & fatten Hens, Chickens, Geese, ducks, &c. with diuers other sorts of fowle, in a more cheap manner, then hath as yet beene made knowne or common to the world.*

IKnowe diuers that haue contented themselues, to feed and fatten them with graines onelie, whereof they haue made a great benefit vnto themselues; by reason of the easy price for which they are sold. But if you take the bloud of beasts, wherof ỹ Butchers make no great reckoning, filling stone pottes therewith, whose couers may bee full of such holes, as that the flesh flies in sommer time, may easilie get in and out at the same, you shall finde the bloud by meanes of the flie-bloes and putrefaction together, wholie conuerted into white and glib worms (which the anglers call Gentils) which will fatten them exceedinglie, & make them eate most tenderlie. A Dutch man that first practised this secret in a Noble mannes house of England, (whose fowle for the tenderneſſe of their flesh, was highlie commended of all his ghestes) had a yearelie stipend of twentie nobles conferred vppon him by his Lord, during his naturall life, for the discouerie of the secret. Yet I coulde wishe, that these wormes did first scoure themselues, either in mosse, lome, or bran, before they were scatred amongst the fowle: And if notwithstanding this helpe, the foode shall seeme offensiue to our weake stomaches, especiallie being made acquainted therwith before hand, then receiue the same in a better form and in a sweeter manner at my handes, who haue alwaies desired to giue all the grace which I might to any secret of good vse. Boile this bloud with some store of branne amongest

amonſt it (perhaps graines may ſuffice, but bran is the better) vntil it come to the nature and ſhape of a bloud pudding, & therewith feed your foule ſo fat as you pleaſe, and this wil be both a wholſom & a clenly feeding for them. Som commend, carrots, turnips, Parſenips and pompeons, firſt ſodden and then ſome bran or courſe pollard mingled therewith. You may feed Turkies with bruſed acrons, and they will proſper exceedinglie with them. Some to fatten their capons ſpeedily, put them into coopes wherin ech bird hath a ſeueral roome deuided from the reſt, being ſo ſtraight and narrowe as that the hen or capon may onely feed himſelfe and rooſt therein, not being able to turne his bodie, thereby perſwading themſelues that wanting motion and exerciſe he wil ſoon growe to be fat and of greace. Some do vſe to keepe fowle 2. or 3. daies without meat, til they be exceeding hũgrie, and then they giue them their fill. Others doe ſoke chippings and other cruſtes of bread in broken beere, or flatten milk, wherewith they do afterwarde feed their capons: out of al theſe a good huſwife will eaſilie chooſe both the likelieſt and the beſt.

8. How to write a letter ſecretlie that cannot eaſilie be diſcouered, or ſuſpected.

WRite your minde at large on the one ſide of the paper with common inke, and on the other ſide with milck, that which you woulde haue ſecret, and when you would make the ſame legible, holde that ſide which is written with inke to the fire, and the milckie letters wil ſhew blewiſh on the other ſide. Or elſe rule two papers of one bigneſſe with lines of an equal diſtance, make the one ful of glaſsewindowes, through which you muſt write your mind vpon a ſe-

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cond paper, thē fil vp the ſpaces with ſome other idle words: but if all were made to hang togither in good ſenſe it would carrie the leſſe ſuſpition. Each friend muſt haue one of theſe cut papers to read all ſuch letters as ſhalbe ſent vnto him, & this maner of writing will trouble a good decipherer to bring in to perfect ſenſe. Alſo you may firſt write an ordinary letter that may carry ſome good ſenſe to your friend, but let the lines be wide aſunder. Then betwene theſe lines write your ſecret letter with gall water onely wherein the gauls haue bin infuſed but a ſmall time (for if after you haue writtē therwith there be any ſenſible colour left behinde vpon the paper, you muſt throw away that water and make new.) This being drie and of one colour with the paper, will giue no cauſe of ſuſpition, & the rather becauſe the letter purporteth a ſufficient ſenſe already. Now for the diſcouery therof, you muſt diſſolue ſome coppres in faire water. & with a fine caliber penſill firſt dipped in ỹ coppres water, you muſt artly moiſten the interlining of your letter, and thereby you ſhall make it ſufficiently legible. This is one of the moſt ſecrete waies that I know. But yet the fineſt conceited way of all the reſt in my opinion, is ỹ cloſe cariage of a letter within a lawne or Cambricke ruffe or handkirchief, which a man may weare for his neceſſary vſe without the defacing of any one letter cōtained therein. And this ſerueth moſt fitly for a loue-letter, which may without all ſuſpitiō of friends be eaſily preſented in a hākirchief to any gentlewomā that ſtandeth well affected to her ſecretary. There is alſo a redy way without changing of the Alphabet to write ones mind ſpeedily vpon paper, & yet the ſame not to be deciphered without the helpe of a rolling pinne of the ſame ſcantling with that whereon it was firſt written.

written. But theſe two latter conceits (for ſome reaſons beſt knowne vnto my ſelfe) I may not ſo boldly impart as otherwiſe I would.

9 *How to brew good and wholſom Beere without anie Hoppes at all.*

SInce my profeſſion in this booke is in ſome ſort to anotomize both Art and Nature, without any regard of priuate mens profits, whom it may either eſcentially, or accidentally touch: I am bolde therefore without crauing any leaue to do good, to renue or rather to confirm & ratifie an ancient opinion & practiſe, which long ſince in the great dearth and ſcarcity of hops many Brewers of this land, haue bin forced to put in vſe for ẏ better ſupportation of their weak & declining eſtates. But becauſe they failed in proportion (without the which there can be nothing cõplete or abſolute) they ſuffered a good conceit to die in the birth. And no maruel then if wormwood notwithſtãding it be a ſimple ſo highly cõmended of all the anciẽt & new Herbariſts for his great & ſingular effects in phyſick, be in a maner vtterly abandoned of all the brewers of our time (except a few ẏ can make a difference betweene 5. s. and 5. li. charge when hops are ſold for 50. s. the hundred, ſeeing as yet not any one of them hath ſo clarkly wrought vpon this ſimple as to couer & hide the taſte therof, from ẏ wel mouthed Ale-conners of our cõmon wealth. Which weaknes of theirs becauſe it conſiſteth wholly in the want of a due proportion betwene the mault & other beercorn in reſpect of wormwood, I haue thought good to ſet downe a ſufficient direction, for ſuch as are wiſe and willing to doe good both to themſelues and to their Countrie, whereby they may eaſily euen in one dayes practize attaine to the full perfection thereof

Suppoſing

Suppoſing then that your Wormewood is either cut down in the leaf before it be ſeeded, or being ſeeded that it is cut into ſhort peeces, whereby there may be made an equall mixture of the whole bulcke togither (for you muſt note that the ſeeded toppes are much ſtronger and more oyly then the reſt of the leaues or ſtalkes) make firſt a decoction of foure ounces of hops with nine gallons of water (which is the proportion that ſome Brewers in ſome ſorts of drink doe vſe) and when you haue gotten out by ebulition the full ſtrength and vertue of them, keepe the ſame apart, and begin likewiſe with ſome ſmall proportion of Wormewood to the like quantitie of water as before, and when you haue beſtowed as much time and fire herein, as you did about the hoppes, then taſte each of them by it ſelfe, and if you finde the ſame to exceed the firſt in bitterneſſe, then begin with a leſſe proportion of Wormewood, and ſo reiterate your worke, vntil you haue equally matched the one with the other, then may you ſafely proceede by the rule of proportion to a barrell, and from thence to a tun, and ſo to a whole brewing. Neither let the exceſſiue bitterneſſe of Wormewood in his preſent taſte anie thing diſmay you, for if you did but taſte the decoction of hoppes onely before the mixture of the ground mault (which doth wonderfully ſweeten the ſame) you would think it a verie vnapt liquor to be wrought vp into ſo pleaſing a drinke as our ordinarie Beere doth ſhewe it ſelfe to bee. For it is the Hoppe onelie which maketh the eſſentiall difference betweene Beere and Ale, and that by allaying of the exceeding luſciouſneſſe of the mault with his bitternes, whereby both vniting themſelues together, become a ſauorie and wholſome drinke for mans bodie. Which

may

which may bee as well in euerie reſpect perfourmed with Wormwood as with the Hoppe, yea and peraduenture with Centuarie, Artichoke leaues, or *Aloes hipatîque*, as ſome workmaſters haue confidently affirmed vnto me. And though the Hoppe be vſuall in drinke, and the Wormwood onely in medicine, whereby ſome may happily be perſwaded, that it is inconuenient for men that are in health to drinke a medicine continually to their meate, yet let this be a ſufficient anſwere to that obiection, that it is the doſe onely that maketh the difference herein. For I can aſſure you in mine owne experience, and by the experience of one of the beſt experienced Brewers of London who yet liueth, that if you giue a double or treble quantitie of good Engliſh hoppes, to an ordinarie guile of ſtrong Beere, you ſhall find the ſame to be a ſufficient preparatiue to your bodie for the beſt purgation that ſhalbe miniſtred after. And this can one of the right honourable Peers of this lande ſufficiently witneſſe, who togither with ſome good part of his retinue, hauing well taſted at a dinner of ſuch Beere, as (by the miſpriſion of the Brewer of Engliſh hoppes for Flemiſh hoppes) was ſo ouerhopped, that both himſelfe and the reſt of his family that was then about him, were ſuddenly ſurpriſed with a great looſneſſe. And this is the reaſon why Venice Turpentine which being miniſtred in a ſmall doſe is giuen for the ſtrengthening of the backe, and to ſtay the running of the reines, yet if it be taken in ỹ quantitie of an ounce at once, it will purge ſufficiently in diuerſe bodies. So then either let there be no more taſte of wormwood then there is of hoppes in our drinke, and wee ſhall finde no difference in effects, but ſuch as ſhall commend and grace the wormwood beyond the hoppe,

or elſe let beere be aduaunced with the hoppe to the bitterneſſe of wormwood wine, and ſo we ſhall finde the hop farre to exceede the wormwood in his maligne qualitie. Neither woulde I haue any man to thinke, that I doe either wrongfully intrude vpon other mens poſſeſſions, or preſumptuouſly vndertake a charge which I cannot performe, for I am in by diſcent, and haue continued fiue yeares in poſſeſſion at the leaſt, and therefore am not eaſily to be remoued without a philoſophicall action commenced againſt me. And becauſe you ſhall farther knowe that I haue ſome reaſonable skill in my trade, I dare vndertake without the helpe of any yeaſt at all, to bring ẏ woort either of Ale or Beere to his perfect workemanſhip (wherin it ſhall cõtinue at the leaſt either ſix or ſeuen daies togither) without any intermiſſion, & that only by a philoſophicall ſtirring vp of the fire of nature which ſhall extend and ſpread it ſelfe *à centro ad circumferentiam*, till it haue digeſted the whole body to his perfect ripeneſſe or maturitie. Thus much I haue thought good to publiſh for ẏ credite of wormwood, and for the benefite of this Iland in ſundry reſpectes, which I ſhal not need to particularize at this time becauſe they are ſo commonly knowne to all men. And though I know I may bee ouerweyed either with the Fraunders Merchants, or with the great Hoppe-maſters of Englande whoſe foundation is ſo deepelie laide, that a fewe looſe lines can neither ſhake nor ſtirre the ſame: yet either knowing, or at the leaſt perſwading my ſelfe to maintaine the trueth, before I giue it ouer I will craue the libertie of the ſchooles, *quod fiat controuerſia*. And in the meane time thoſe which will not bee ſatisfied, of the wholeſome and rare medicinable helpes of the one, togither with

the weake and feeble vertues of the other, (which was but a Hedgebirde the other daie, though nowe it bee perking ſo prowdly vpon his poles) I will referre them to the learned Herbals of Dioſcorides, Matheolus, Doctor Turner, Dodoneus, Turnizerus, and the reſt.

10 Howe to harden Leather ſo as the ſame ſhall laſt much longer in the ſuckers of Pumpes then it dooth vnprepared.

THis ſecret is ſo neceſſarie for the whole lande, as that I muſte craue pardon of my eſpeciall good friend for the diſcouerie thereof. Lay ſuch leather as is well tanned, to ſoake in water wherein there hath beene ſome ſtore of the filings of yron a long time, or elſe in the water that hath lien long vnder a Grindſtone, into the which ſuch yron as hath beene from time to time ground away, hath fallen, and there ſetled. This hath beene found to bee a ſecret of good vſe, by one of the Pumpemakers of our time, and if thou canſt pumpe out any better vſes of this ſecrete, take them in aduauntage, and remember where thou hadſt them.

11 A conceipted Chaffingdiſh to keepe a Diſh of meate long hote vpon the Table without any coles therein.

LEt the Diſh bee ſomewhat deepe, and cauſe the Chafingdiſh to bee made of ſuch ſhape as may beſt receiue the ſame, into the which you may conuey a peece of yron red hote, the ſame beeing of an apt forme to lie in the bottome of the Chafingdiſh.

This will continue his heate a long time, and if you haue one other ſpare iron to heat as the firſt cooleth, you may keepe any diſh of meate warme as long as you thinke good. From this ground did thoſe warming pinnes firſt ſpring, which of ſome are called Froes, and being put into their caſes, and thoſe caſes wrapped in linnen bagges, doe ſerue to heate beddes with, and to caſt one into a kindly ſweat. The like deuice is alſo vſed by others in conueying of ſuch iron pinnes into hollow boxes of wood firſt lined inwardly with mettall, and iron cheſts, either to lay vnder their feete where they vſe to write or ſtudie in colde weather, or in their coches to keepe their feet warm. The now diſtreſſed king of Portugall cauſed a paire of wooden ſoles to bee made for a paire of ſhooes which he had to ſit in, which he would warme at his pleaſure with *Mars* well rubified.

12 *Howe to roſt meate more ſpeedily, and with leſſe fire then we now do in our common maner.*

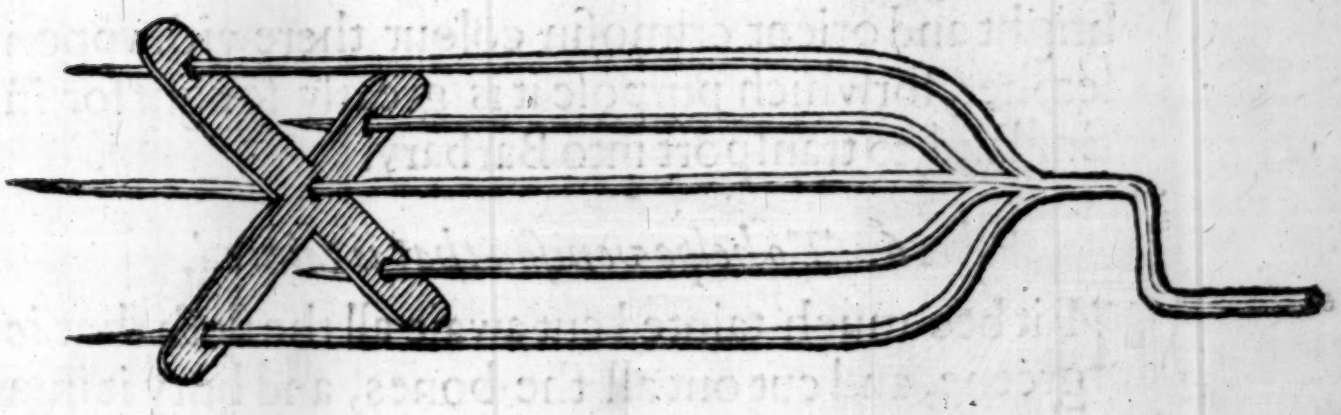
MAke a ſquare and concaue boxe, or elſe of the faſhion of a Cilinder of iron plates, or elſe of wood lined with thoſe plats long inough and large inough for ſuch and ſo many ioynts of meat as you meane to roſt at once, within which Cilinder let the meat turne as it roaſteth. For the reflexion of the heate that is gathered within the boxe will make great expedition. Note that the boxe muſt onelie couer the meate, becauſe you are to leaue a fire (if neede be) to hang on a pot or kettle ouer the ſame fire. It muſt alſo be cloſe on euery ſide ſauing onely agaynſt the fire, and at the ſides thereof you muſt haue ſlittes to let in the ſpitte. I haue heard of the like deuiſe heretofore executed

executed by an outlandiſh potter in burnt clay, for the which he had his priuiledge, but his deuice wanted a couer, it was exceeding heauie, very apt to bee broken, and not ſo ſtrong in reflexion as this metalline deuiſe, eſpeciallie if it be kept cleane and bright.

13. *To make a new peece of Walnut tree or Wainſcot to be of one ſelfe-ſame coulour with the old.*

FIrſt ſtraine walnut rindes well putrified with ſome liquor, and with a ſponge rubbe ouer your wood throughlie well, and after it is drie, rub the ſame ouer againe with good olde Linſeed oile, & it wil become of an excellent brown colour: then if the other wood which you would haue match with it, do much differ frō the new in colour, you muſt alſo with fine ſand, skoure off all the filth and greace of your olde wood, and then rub it alſo ouer with Linſeede oile. Some take broken beere only. By this meanes I had an old waineſcot window, that was peeced out with nevve wainſcot by a good workeman, and both becam verie ſuteable and of one colour.

14. *How to turne 5. ſpittes at once with one hande, whereby alſo much fier is ſaued.*



FAsten 5. round ſpittes together, like the teeth or tines of a mole-ſpeare, with a handle in the center of them, let them be placed in a reaſonable diſtance the one from the other, according to the bigneſſe of the iointes of meat that you vvould roaſt vpon them, (I take them to be moſt apt for fowle) you muſt alſo haue a croſſe of yron, hauing a hole in euerie corner therof, to receiue the ends of theſe ſpits, which may be propped with a ſtaie behind that it fall not backeward. Vſing theſe ſpits, you ſhall not neede to rayſe your fire vppon ſuch high raunges as otherwiſe you ſhall be forced to doe, when one ſpit is placed directlie aboue another. This ſecret I haue borrowed out of Pope *Pius* the v. his kitchin.

15. A probable coniecture at the compoſition of harde Waxe.

IAm verilie perſwaded, that the eſſentiall part, if not the whole bodie thereof, is made of the gum *Lacca*, peraduenture refined a little, or incorporated with ſome other apt bodie. For I haue ſealed therewith oftentimes, and doe find the ſame to agree with hard wax, in the perfect taking of the impreſſion of the ſeale, in the manner of the burning, in the ſmell, and in brittleneſſe. It onely differeth in cleerenes and colour. I haue heard that the Barbarians doe make a bright and orient crimoſin colour therewith vppon leather, forwhich purpoſe it is greatly ſought for in England, to tranſport into Barbary.

16. To helpe veniſon that is tainted.

IF it bee much tainted cut awaie all the fleſh that is greene, and cut out all the bones, and bury it in a thin

thin olde courſe cloth a yard deepe in the ground for 12. or 20. houres ſpace, and it wil bee ſweet enough to be eaten as I am enformed by a Gentlewoman of good credit, and vpon hir owne practiſe.

17. *How to make a Piſtol whoſe barrell is two foote in length to deliuer a bullet point blank at eight skore.*

A Piſtoll of the aforeſaid length and beeing of petronel bore, or a bore higher, hauing eight gutters ſomewhat deepe in the inſide of the barrell, and the bullet a thought bigger then the bore, & ſo rammed in at the firſt three or foure inches at the leaſt, and after driuen downe with the skowring ſtick, will deliuer his bullet at ſuch diſtance. This of an Engliſh Gentleman of good note and for an approoued experiment.

18. *A peece whereby to performe ſome extraordinarie ſeruice either by Sea or land.*

CAuſe a long barrell to be made and of the bore of a Tennis ball, of fiue or ſixe foot in length and well ſtocked, hauing within twelue inches of the mouth thereof, a hooking iron of foure inches in length, forged to the neather part of the peece, by which hooke you may ſtaie your peece by ſom raile, or other peece of timber, whereby you may ſafelie diſcharge the ſame, without feare of any recoile vpon you. *I* leaue the full vſe thereof to bee found out by Martiall men. *T*his inuention I hadde of the fine lymner of Lambith, beeing a Gentleman of good conceipt in all ingenious deuiſes.

19. To make greene wood to burne cleere, at the farther end of the Ouen.

IF you burne greene wood in an ouen, it burneth ſomwhat cleere toward the mouth of the ouen but commonly black&deadiſh at the further end, wherby the ouen is neuer ſufficientlie heated to bake well. You ſhall find a remedie thereof in this manner. Deuide the mouth of the ouen into foure equall partes, and cauſe a bar of yron to be made as long or ſomewhat longer than the mouth of the ouen,& in bredth one exact fourth part thereof. Faſten this bar ouerthwart-wiſe in the middle point of the ouen mouth, and this will make a partition, betweene the fire and the aier, ſo as the ayer will paſſe vnder the bar to kindle the fire,and the flame will iſſue ouer the barre,and ſo the ſmoke which before did choke the fire will alſo haue his paſſage.

20. How a man may walke ſafelie vpon a high ſcaffold or peece of Timber, without danger of falling.

THis is eaſilie performed by wearing of a paire of ſpectacles,whoſe ſightes muſt be made ſo groſe, as that he which weareth them may not diſcerne any thing a farre off, but at hand onely. For it is the ſight onely of the ſteepeneſſe of the place, that bringeth the feare, and ouerturneth the braine. By this means I haue heard that the Engliſh man which diſplayed an ancient vpon a ſcaffold neere the top of the pinacle of Paules ſteeple, did helpe himſelfe in his deſperate attempt.

21. *A round ball of Copper or latton, that will blow the fire verie ſtronglie, onely by the attenuation of water into ayre, which deuice will alſo ſerue to perfume with.*

MAke a round ball of Copper or Latten, of ỹ bigneſſe of a ſmall bowle, ſoder thereunto a rounde pipe or necke, of three or foure inches in length, and ſomwhat leſſe than a gooſe quil, at the end whereof, in the manner of an elbowe, ſoder on a leſſe pipe no bigger than a ſtraw, whoſe vent in the ende may not much exceed the bignes of a pinhole, let al the ioints and ſides be ſodred with ſiluer ſoder, heate the ſame well in the fire, and then put it into a veſſel of cold water, and it will ſucke ſome of the vvater vnto it, you may heate the ſame ſo often, till by the peize thereof you may bee aſſured that it is more then halfe full. Then ſet this ball vpon a few glowing coles, and you ſhall finde the ſame to giue a very ſtrong blaſt againſt the fire which you mean to kindle, directing the noſe of theſe bellowes towards the ſame. I make no queſtion, but that it is poſſible with a verie ſmall helpe to melt dovvn either gold or ſiluer with theſe bellows, and that the ſame may be made ſo large as that they wil blow one whole houre together, without anie intermiſsion. If you make a little round ball of ſiluer in this maner, only with a ſmall and ſtreight pipe, riſing out of the bodie therof, you may put ſome



roſe water or ſome other ſweet ſenting water therin, and therewith perfume your chamber, and by this meanes a ſmall quantitie of ſweet water will be a long time in breathing out.

22. *How to erect or build ouer any brooke, or ſmall riuer, a cheape and woodden bridge, of 40. or 50. foote in length, without faſtening any timber work within the water.*

PEece the timber work in ſuch ſort, as that it may reſemble an arch of ſtone, make the ioints ſtrong, and binde them faſt with crampes or dogs of iron, let this bridge reſt vpon two ſtrong pillers of wood at either end, both being well propped with ſpurres, & at either ende of your bridge make a ſtrong buttreſſe of bricke, into the which you muſt let your pillers and ſpurres, that by no meanes they may ſhrinke or giue backewarde, then planke ouer your bridge and grauell it and it will laſt a long time. This is already in experience amongſt vs.

23. *A cheape Lanterne, wherein a burning candle may be carried, in any ſtormie or windie weather, without any horne, glaſſe, paper, or other defenſatiue, before it.*

MAke a foure-ſquare box, of 6 or 7. inches euerie waie, and 17. or 18. inches in length, with a ſocket in the bottome thereof, cloſe the ſides well either with doue tailes or cement, ſo as they take no aire, leaue in the middeſt of one of the ſides a ſlit or open dore, to put in the candle, which from the bottome to the toppe thereof may containe 6, or 7. inches in length,

length, and twoe and a halfe in bredth, place your candle in the ſocket, and though it ſtand open and naked to the ayre without any defenſe, yet the winde will haue no power to extinguiſh the ſame. The reaſon ſeemeth to be becauſe the box is already full of ayre, whereby there is no roome or place to conteine any more, neither can the ayre finde any thorough paſſage, by reaſon of the cloſeneſſe thereof. The ſocket would be made to ſcrew in and out at the bottom and then you may put in your candle before you faſten the ſocket. This is borrowed of one of the rareſt Mathematicians of our age.



24. How to plom vp a horſe, and to make him fatte and luſtie, as alſo howe to keepe a Iade from tiring by the way, and to make him to foame at the bit.

TAke *ænula campana*, Comminſeed, Turmericke & annis ſeeds, of each a pennieworth, and ſeeth them well (with three heades of Garlike amongeſt them well ſtamped) in a gallon of Ale, then ſtreine it and expreſſe as much of the ſubſtaunce as you may well wring out, and giue your Horſe to drinke thereof bloud-vvarme a full quart at once, then ride him til he be hot, then ſtable him, litter him well, and currie him vntill hee bee colde, doe the like two or three morninges together, and ſo turne him to graſſe, and he will thriue woonderfullie in a ſhort time. Some commend a handfull of grunſell ſodden in the afore-

ſaide ale with the reſt of the ingredientes. But if you keep him in the ſtable, giue him to eat in his prouender the rootes of *ænula campana* with ſome commen ſeedes both beaten togither, or ỹ *ænula campana* ſmal ſhred, for 14. daies together, and it wil make a leane Iade to thriue more in one moneth, then otherwiſe he would doe in three. And when you ride abroade vpon a hired Hackney, carie a good quantitie of the powder of *ænula campana* with you in ſome leather bag, and when others doe baite their horſes in their ordinarie manner, your horſe being firſt well walked, littered, and rubbed, giue him a handfull of this powder in a quart of ſtrong ale with a horne, and tie his head high to the rack, and you need to giue no other or verie little prouender vntil night, then let him bee well meated, and giue him in the morning two peny vvorth of bread, and his ale with the povvder, but water at night. This a friend of mine yet liuing, did learn of a good fellow that had beene a ranke-rider in his daies, by whoſe meanes though his hackney tired at Briſtow, yet this companion for his better encorage-ment, ſeeing him out of all heart, by reaſon that hee was like to loſe ſo good companie as then was gathered together, he exchaunged Horſes vvith him, and brought the Hackney (by the meanes aforeſaide) verie quicke and liuely vppe to London. Alſo if you tie a prettie bunch of Peni-royall about the bit within the Horſes mouth, the Horſe champing thereon, will foame gallantlie, and trauell vvith muche more courage. Another Gentleman, who alſo attendeth vppon a verie Honourable perſonne, tolde me, that whenſoeuer hee founde any Iade to tire vnder him, hee woulde preſentlie take off his Saddle, and vvith a good quantitie of *Arſeſmart* (which is an hearbe that

that groweth almoſt in euerie Ditch and ſtanding Water) rubbe him well on the backe vnderneath the Saddle, and aftervvarde lay a good quantitie of *Arſeſmart* vnder the ſaddle, and ſo ride him any reaſonable iourney. Theſe ſecrets I thought good to diſcouer for the benefite of all Engliſh trauellers, and I hope they are true becauſe my authours are aliue, and ſpeake of their own experience, and not by bare report from others, they doe alſo carrie great probabilitie with them. But nowe from the horſe to the Rider.

25 A ſpeedie or preſent drinke which trauailers may make for themſelues, (ex tempore) *when they are diſtreſſed for want of good Beer or Ale at their Inne.*

TAke a quart of good water, put thereto fiue or ſix ſpoonfuls of good *Aqua cõpoſita*, which is ſtrong of the *A*nnis ſeedes, & one ounce of Sugar with a branch of Roſemarie, brew them a pretie while out of one pot into another, and then is your drinke prepared. Or if you leaue out Sugar it will be pleaſing inough. I haue bene crediblie enformed, that diuerſe gentlemen of good credit when they trauell abrode, and cannot like the taſte or reliſh of their drinke, that they vſe no other then the aforeſaide compoſition, and finde the ſame both to refreſh and coole them verie well, neither are they troubled with the rawnes of colde water, by reaſon that it hath receiued ſome correction from the *Aqua Compoſita*, and that the *A*nnis ſeedes doe giue a delicate taſte vnto it. It were not amiſſe for all ſea-men to carrie ſome ſtore of *Aqua Vitæ* with them, that when t heir Wine, Sider, Perrie, and Beere are ſpent, they may tranſmute their water into the ſaid drinke.

26 How any man may safely put his finger or hand into molten lead, without any danger of burning.

TAke of quickesiluer one once, Bole Armoniack of the best two ounces, Camphire half an onnce, common *Aqua vitæ* two ounces, first beate, and then mingle all these well togither with a pestle in a brazen morter, then annoint your hands al ouer throughly well with this ointment, & be sure that your hands are cleane without itch or scabbe. I did see a Dutchman called Haunce, a prety nimble Chimist, who after he had set some lead on the fire in a melting pot, till it became blewish and exceeding hot, hee stirred the same first with his forefinger vp and downe, pretending to see whether it were not too hot to endure in the palme of his hande, and afterwards telling his fellow that it was of a good temper, he caused him to poure the same out being some half pound in weight into the palme of his hande, first prepared as before, and presently he poured it into his other hand, and so out of one hand into another fiue or sixe times together, till in the ende he threw the same cold vpon the ground. This hee did for a pot of the best Beere in a garden in Southwarke about ten or twelue yeeres sithence, in the presence of my self and diuers others, at which time I writ the receit euen as I did both see him make it, and vse it my selfe, disbursing the charge both of the Beere, and the ingredients.

27 How any man may hold a hot iron barre in his hande without burning his flesh.

DIppe your hand in molten glewe (take heede the glew be not too hot) & presently strew the powder

der of horne burnt to aſhes vpon the glew, then dip your hand againe in the glew, and ſtrew more of the ſaid powder thereon. Note that the thicker your bar is, the thicker cruſt you muſt make vpon your hande. This I learned of an olde and skilfull man that yet liueth, and aſſured me that hee had made often triall thereof. *Qre.* if this be not a good deuiſe to defende mantletrees, and other peeces of timber that ſtande neer the fire from burning. Take an equal proportion of fiſh-glew, and Alom, mingle them well together, the glew being firſt diſſolued in wine vineger, then parget ouer whatſoeuer thou wilt with this compoſition, and throw the ſame into the fire, and it ſhall not burne. This out of the ſecrets of *Wickerus 110.* See *Cardane de rerum varietate. 644.*

28 *Sweet and dilicate Cakes made without either Spice or Sugar.*

SLice great and ſweet Parſnep rootes (ſuch as are not ſeeded) into thin ſlices, and hauing waſhed and ſcraped them cleane, then drie them and beate them into powder, ſearcing the ſame through a fine ſearce, (*Qre.* if there might not be ſom means found out for the grinding of them, whereby to make the greater riddance or quantitie,) Then knead two parts of fine flower with one part of this powder, and make ſome cakes thereof, and you ſhall finde them to taſte verie daintilie. I haue eaten of theſe cakes diuerſe times with verie great good liking.

29 *How with one candle to make as great a light as otherwiſe with two or three of the ſame bigneſſe.*

CAuſe a round & double Glaſſe to bee made of a large ſize, & in faſhiō like a globe, but with a great round

roundе hole in the toppe, and in the concaue part of the vppermoſt Glaſſe place a Candle in a looſe ſocket, and at ſome hole or pipe which muſt bee made in the ſide thereof, fill the ſame with ſpirite of Wine or ſome other cleare diſtilled water that will not putrifie, and this one Candle will giue a great and wonderfull light, ſomewhat reſembling the Sun beames. Note that this Glaſſe is not much vnlike to thoſe Wine drinking bolles that haue falſe bottoms, wherein Sacke, or Claret wine may bee conueyed with faire water onelie in the vppermoſt part of the Cup, whereby a plaine meaning man may eaſilie be deceyued. This conceipt of a Candle, a Gentleman of good account, and my eſpeciall good friend did learne in Venice, where hee was ſhewed the ſecrete for a fewe French Crownes. *Qre.* What light a Candle woulde ſhewe if it were placed in a large Cilinder like vnto a halfe Lanterne, all of Latten kept bright and gliſtring, the ſame being inwardly garniſhed with diuerſe ſteele Looking-glaſſes, ſo artificially placed as that one of them might reflect vnto an other. I knewe an expert Ieweller, dwelling (whileſt he liued) in the Blacke-friers, who had a Glaſſe with a round bellie, and a flat backe ſtanding vpon a foote, with a Lampe placed ſo at the backer part thereof, as that the light thereof was iuſt oppoſite to the center of the bellie through which (the Glaſſe being firſt filled with ſpirite of Wine) there would ſo brim and glittering light appeare, as that by the helpe thereof he would graue anie curious worke in golde as well at midnight as at the noone day.

30 *How to make great postes and peeces of timber that are to be driuen into the earth, or piles for water works to last much longer then otherwise they would.*

I Haue heard that the Venetians whose houses doe stand vpon piles of wood, do vse to burne or scorch the timber in a flaming fire, continually turning it round with some engine, vntill they haue gotten a blacke and hard colie crust vpon it, and so they finde it to last some hundreds of yeares, as it hath beene reported vnto me. A Kentish knight of good woorth did also assure me, that they vse to burne in this manner the endes or poyntes of their postes, which they driue into the grounde when they make their pales and other enclosures. This secret carieth great probabilitie with it, for that by this meanes the outwarde part of the wood is brought both to such a hardnesse and likewise to such a drinesse, *vt, cùm omni putrefactio incipiat ab humido*, for want of moysture and sappinesse, neither the Element of earth, nor yet of water can make any penetration into it.

31 *To make all the choppes and clefts of greene timber to close againe.*

ANnoint or supple well the greene timber which you doe expose into the ayre, with the fatte of powdred beefe broth, and soake it well with sponges or pensils into the clifts or choppes thereof, do this twice ouer, and you shall finde the same to answere my report. Some Carpenters doe vse to close vp the great choppes of Wood with Greace and Sawdust mingled together, but the first I take to bee the

better way, for that I haue thereby ſeene the timber to come ſo cloſe togither, as if it had neuer beene windſhaken at all, but note that the timber muſt bee thus prepared in time, and whileſt it is greene.

32 How to graue any armes, poſies, or other deuiſe vpon an egge ſhel, & how to through-cut the ſame, with diuers works and fancies, which will ſeem very ſtrange to ſuch as know not the maner of the doing thereof.

DIppe an egge in ſuet being molten, firſt the one halfe, and then the other, holding the ſame betweene your thumbe and forefinger when you dippe it, let the ſame coole in your hand, and beeing colde, with a ſharpe bodkin or ſome other inſtrument of iron, worke or graue in the ſuet what letters or portrature you wil, taking away the ſuet clean, & leauing the ſhell bare at the bottom of your worke. Then lay this eg thus engraued in good wine vineger or ſtrong alliger in a Glaſſe or ſtone Pottinger, for ſome ſixe or eight houres, or more, or leſſe, according to the ſtrength and ſharpeneſſe of the Vineger, then take out the egge, and in water that is blood warme diſſolue the ſuet from the egge, then lay your egge to coole, and the woorke will appeare to bee grauen in the ſhell of a ruſſet colour. *Sæpius probatum.* And if the egge lie long inough in the vineger after it is ſo grauen, and couered with ſuet as before, the letters will appeare vpon the egge it ſelfe being hard ſodden, or elſe if you care not to looſe the meate, you may picke out the ſame when the ſhell is through grauen, and ſo you ſhall haue a ſtraunge peece of worke perfourmed. Thoſe two latter conceiptes I learned of late, but I haue not prooued them, but in all likelihoode they

they ſhould ſeeme to bee true.

33 *An apparance of ſtrange formes in a Glaſſe.*

GRind an Angell weight of fine leaſe golde, with two ounces of *Sal armoniacke* vpon a marble till you can ſcarcely diſcerne any golde, then take two parting Glaſſes each of them containing a pinte, in the one put the ground golde with foure ounces of good ſtrong water, and in the other glaſſe put foure ounces of Mercury with eight ounces of *Aqua fortis*, ſet both theſe glaſſes in warme aſhes vpon ſome furnes, till both the bodies be diſſolued, then take a parting glaſſe of a quart, and whileſt the ſubſtances being diſſolued are yet warme, poure the ſame into your quart glaſſe, but firſt you muſt put in your ſtrong water wherein the Mercury was diſſolued (I write according to the practize which I did ſee) and then poure the other water vpon that, and preſently you ſhal ſee an extreeme thick blackneſſe, which a Dutch Alchimiſt and practiſer of phiſicke that died of ỹ laſt yeres plague (vpon the diſcouery therof) wold maintain to be that *nigrũ nigro nigrius*, ſo much ſpoken of amongſt the philoſophers, & after a while when the water began to cleare, then he termed it *cælũ chriſtallinũ*, after that did appeate a continual riſing & falling as it were of flakes of ſnow which continued certaine houres, & then as it were a hil al couered with pearle, & that he called *ſcpulchrũ Moſis*. Al which compoſition hauing ſtood one night, there appeared diuerſe ſpires like blades of corn or graſſe but of a whitiſh colour in the bottome of the glaſſe, yet in the end, by a reuerberatory furneſſe hee turned al this great matter into a precipitate, and therefore it muſt needes

bee a Philoſophicall woorke that did ende in ſo great an *arcanum*. Yet the ſame if it bee truelie perfourmed is woorth the beholding, if it were to no other end, then to put vs in minde of Democritus his *Atomi*, which concurring together, at length engender bodies. There is a like woorke to bee perfourmed in ſiluer, whereby I haue ſeene ſeuerall fourmes and ſhapes of things ſomtime to ſpring vp ſuddenly, and ſomtimes in a night or two, the ſame ſomtime repreſenting trees, ſhrubs, hedges, and flowers, and diuerſe other ſhapes, and notwithſtanding many practiſes to find out the reaſon of the differences of theſe forms, I could neuer yet make any one forme twiſe, but that Nature would play ſo infinitly, and at her owne pleaſure herein, as though I did obſerue a iuſt proportion of all the ingredients of this magiſterie, yet (becauſe ſhe found ſome difference of peize when ſhee weyed them in her owne ballance) I had alwayes a ſeuerall and differing forme from the laſt which I made.

34 A portable ynke to be caried in the forme of a powder, in any paper, leather purſe or boxe.

IN Foſter lane or amongſt the refiners of golde and ſiluer, get a large panne, ſuch as they make their teſtes of bone aſhes in, it is a deep diſh made of burnt clay, into this put ſo much of the fatteſt and beſt coppres that you can get, ſet the ſame vpon a treuet ouer a reaſonable fire of charcole, at the firſt it will diſſolue into a water, & after by continuing of your fire it will grow drier and drier, ſtir the ſame continually with a wooden ſpattle into the midſt of the pan, and keepe it from burning or hardning to the ſides of the pan, and when it is throughly calcined into a whitiſh

powder

powder and before it become redde, take it from the fire, then weigh out of this calcined coppreſſe one part, one part of the beſt gals well powdred, and half a part of the cleereſt gum *Arabicke* well powdred alſo, ſearce them all through a fine ſcearce, the finer the better, and it will not be amiſſe if you vſe a lawne ſearce herein. Keepe this powder in cloſe boxes and in the warmeſt places of your houſe, and when you wil write therewith, put ſome of the powder into a ſpoone, adding thereunto ſome water, wine, beere, or vinegar, and ſtir it well together a prettie while, and when it hath ſet'ed a little, you may write therewith, and as it drieth, it will growe blacker and blacker vpon the paper till in the ende it become verie legible. This I haue often proued. Some commend dry Litmas ſcraped in water, and forced to a ſolution, wherwith to write in ſtead of a blew *Inke*. But I thinke it not amiſſe, firſt to diſſolue ſome Gum *Arabick* in the water to keepe your inke the better from ſinking. Theſe ſortes of inkes are verie good for the ſea, becauſe glaſſes are ſubiect to breaking and though you put your inke in leaden pots, yet in time it wil thicken exceedinglie, and then euerie man knowes how troubleſome it wil be to the writer. I could here ſet down ſome other ſorts of inkes that be not common, whereof ſome will fall from the paper in a few daies, and others would corrode or fret the paper in peeces, but becauſe I know but one good vſe of them all, and for that I feare ſo many bad vſes, or rather abuſes, would follow if they were known and made common, I will rather ſeeme ignorant of them, then become an author or helper vnto badde men in their bad purpoſes.

35. How to write both blew and redde letters at once, with one selfe-same Inke and pen, and vpon the same paper.

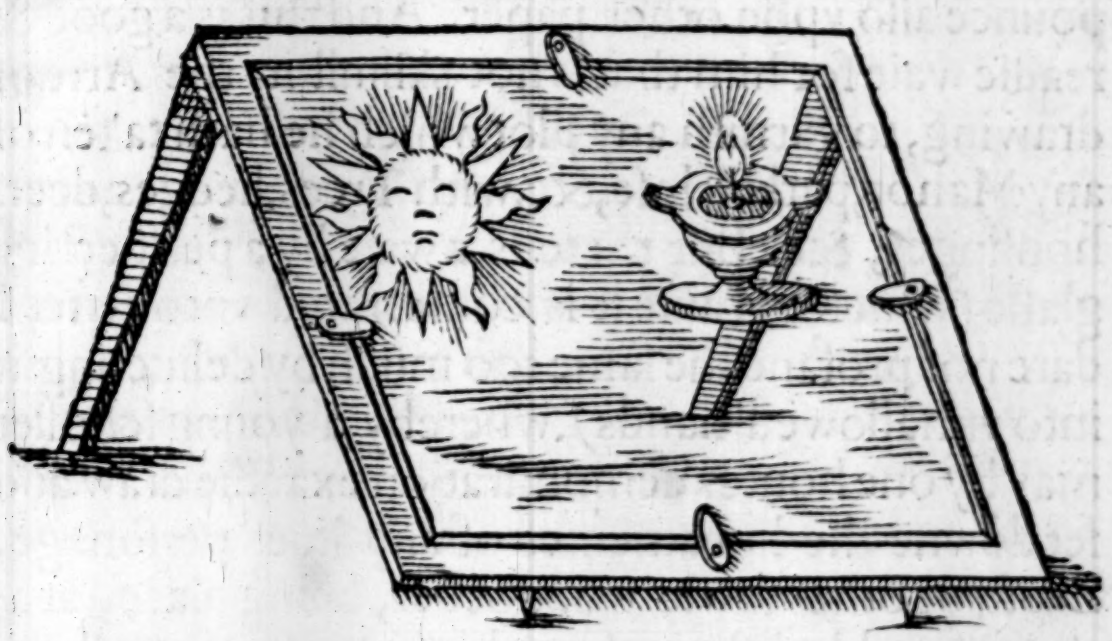
PVt the quantitie of a Hasell nut of Lytmas blewe to three spoonfuls of conduit water, wherin some Gumme *Arabicke* is dissolued, and when it hath setled the space of one hower, if you write therewith you shall haue perfect blewe letters, and if you dip a pensill in the iuice of Lymmons, that is drained from his residence, and do wet some part of the paper ther with, and after let your paper drie againe, and then write vpon the place where the iuice of the lymmon was laid, with your former blew inke, the letters will suddenlie become red, and in all the rest of the paper the letters will be blew. And so you may also make partie letters and other fansies, if you wet your paper accordinglie. *Sæpius probatum.*

36. To keepe Inke from freezing and moulding.

PVt a few drops of *Aqua vitæ* therein, and then it wil not freeze in the hardest Winter that can happen, and in Sommer time if you put salt therein it will not waxe mouldie as I haue beene crediblie informed.

37. How to draw any grose pattern of any Beast, fowle, Tree, Fruit, Flower, Personage, or other picture whatsoeuer.

YOu must haue a deske of the cleerest and euenest glasse that is to be bought, yet I haue seene our Sussex



Suſſex glaſſe to ſerue the turne ſufficientlie (and ſom vſe the skinne of an abortiue Lambe, finelie dreſſed and ſtreined ſtiffe vppon a frame) vppon this Deske you muſt faſten the patterne at the foure endes with a little vvax, vpon the which patterne, lay the fineſt paper that you can get for money, and wax that alſo vpon the patterne as before. Then place your deske with the back therof againſt a brim or perfect light, that hath no other oppoſit nor ſide light to hinder it, and I thinke it beſt of all againſt a window where the ſun ſhineth) and the pattern wil ſhewe all the lineaments thereof very perfectly through the fine paper, vpon ẏ which you may trick, either with a fine pointed cole, black lead, or pen. *Qre*. Of a ſufficient light to be placed vnder the deske by ſeuerall lampes, if thereby alſo in a darke night, you may not diſcerne howe to performe your worke perfectlie. Some in ſteade of this deske doo oyle a paper and lay it vpon a patterne, and draw thereon with blacke lead, and then prick the pattern full of holes & ſo pounce it vpon another paper. And ſome haue paterns of beaſts,

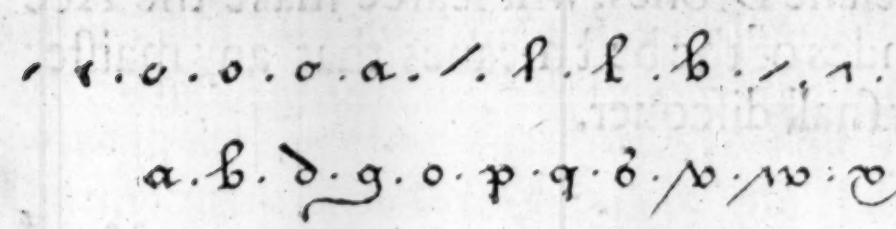
birds,

birds, flowers,&c. prickt out in paper, and thoſe they pounce alſo vpon other paper. And this is a good & readie waie for him that is not skilfull in the Arte of drawing, to garniſh any plot which he hath taken of any Manor, parke, cloſe,&c. with Trees, hedges, deer, houſinges, &c. But there is a waie by a perſpectiue glaſſe (which becauſe it is conſecrated vnto Arte, I dare not profane the ſame too much by deliuering it into vnhallowed hands) whereby a young ſcholler may by one houres demonſtration exactlie draw and ſet downe the lineamentes of any liue perſonage, Beaſt, or other fowle whatſoeuer, being placed at any reaſonable diſtance from him, and ſo of any ſtatelie edifice or building, fort, bulworke, or fortification, and of al manner of engines, whatſoeuer the wit of any worke-maiſter is able either to actuate in the great or to performe in modell onely. Yea al manner of drawne patternes whatſoeuer, bee they neuer ſo great, may by the helpe of this glaſſe (wherof I haue gotten the vſe at the hand of my deare friend) be leſſened and brought within as narrow a Compaſſe as a man would reaſonablie wiſh or deſire. And whoſoeuer ſhall aduiſedlie practiſe by the helpe of this glas, may in one moneths ſpace be able to drawe any patterne by hand onely, without praying in aide of the ſame any more. So likewiſe it is poſſible by waie of reflexion, for any man to behold in a looking glaſſe, and that alſo in his priuate ſtudie, al the geſtures and actions whatſoeuer any perſonne ſhall make or performe, in any roome or corner of his houſe, as alſo to ſee euen in the bottome of his ſeller, whatſoeuer is done vpon the top of Paules ſteeple, or any other ſteeple within London, ſo as his dwelling bee within the Citie or the Liberties therof, or within any competent

petent number of miles distant from the same. But because I doo see that euerie Author is in danger to be censured according to the particular iudgement of euery Reader, and because *Stultorum plena sunt omnia*, I will not extend the credit of this secret to his vttermost bounds, but this shall bee sufficient for the weake faith that reigneth in the world at this time.

38. Some helpes for the speedier and true making and breaking of any letter, as also how a learner may write straight, and giue some prettie grace vnto his letters.

FOr the speedier attaining to any written hand, let some perfect wrighting maister, (and I knowe not whom I should heere commende before mine olde Schoolemaister, Maister *Conradus*, that teacheth ouer against saint *Anthonies* schoole) deliuer a few copies written, or rather broken in this manner. Let him diuide or breake each letter into so many partes, as he hath cause to make any little pause or addition before hee finish the same, which is nothing else but the vndooing & disioining of the same, that a yong scholler may the better see, which waie the same was made vp and brought togither. As for example, the Secretarie small a, hath six partes before it bee made vppe, the b. c. and d. haue foure and some more, and some lesse, and for the better vnderstanding of my whole meaning, I would haue caused the whole Al-



phabet to haue beene cut, and ſo printed in this manner, but that I could not ſtaie the doing of it, and alſo for that I knew that maiſter *Conradus* will ſufficiently performe the ſame with his pen, to any that ſhall bee willing to requite his paines, and hee hath alreadie written ſome ſuch coppies for my children. Alſo it giueth a great grace to your writing, if the whites of certeine letters bee made of one equall bigneſſe with the o. ſuppoſing the ſame were all round, as the white of the b. of the a. p. y. v. w. x. q. d. g. and s. And for the writing ſtraight, and true breaking of the letters, cauſe a paper to bee ruled all ouer, with great lines, drawne with a text penne, vpon which ruled paper, you muſt laie a leafe of the fineſt paper that can bee gotten, ſuch as they doe commonlie ſell for two ſhillings, foure pence the queere, and let the ſcholler write vpon the ſhadowe of the text lines, or elſe if the neather paper be ruled full of ſmall lines, when hee writeth vpon the fine paper, let him haue care, that thoſe ſmall lines may cut or deuide all thoſe letters which he maketh, in the middeſt, and hee ſhall finde great vſe thereof. Some draw the letters firſt in black lead or red inke, and then let their ſcholler run ouer them with blacke inke, till they haue brought their hande in vre with the ſhape and faſhion of the Letters. There is no doubt, but that ſome willing and careful Schollers will finde ſome of theſe helpes, as good as the Ace of heartes in their wrighting, thogh other heedeleſſe Drones, will ſcarce make the Ace of Diamondes of the beſt meanes that any maiſter or Teacher ſhall diſcouer.

39. A Gall water very neceſſarie to mingle with your Inke, as it groweth thick in your ſtandiſh or inkhorne.

SLice or beat ſome of the beſt Galles, and put them in a glaſſe of faire water, and when they haue giuen ſome reaſonable tincture to the water, you may mix the ſame with your inke as it thickneth: this is a more kindlie waie, then to vſe either faire water, beere, or vineger in ſtead thereof. But when the water beginneth to be ouer olde and out of date, you muſt then throw away the ſame and make freſh.

40. How to renew olde letters, that be almoſt worn out of ſight.

THis is performed by rubbing them ouer carefully with the gall water aforeſaid being wel prepared, for that will ſtrike a freſh hew again into the old and outworne Coppres. Theſe two ſecrets I learned verie lately of a skilful & well conceipted gentleman, who hath made ſome practiſes thereof himſelfe, and the firſt I can warrant by mine owne triall.

41. How to ſpeake by ſignes only without the vttering of any word.

DEuiſe 24. ſignes, whereof euerie one may repreſent ſome one of the 24. letters, but place your vowels for the more readines in this maner, Firſt A. vpon the tip of your thumb on the left hand E. vpon ỹ tip of your foreſinger on the ſame hand, & ſo of the reſt, ſo as when you lay the *index* or forfinger of your

right hand on the tip of your thumb on the left hand, the party with whom you shal conferre in this maner may alwaies note the same for an A. the rest of the letters which be consonants, may be vnderstood by touching of seueral parts of your body, or seueral gestures, countenances, or actions, as an hem for a B. a crosse made on the forehead for a C. a phillip for a D. and so of the rest. I haue seene a gentleman togither with a gentlewomā that were very ready in their conceited alphabet, to deliuer their mindes each to other in this manner, when as not any of the standers by vnderstood either word or letter of their meaning. And I hold the same a necessarie arte to be practised of such as doo naturallie lacke their speech, whereby they may be vnderstood of others, which otherwise could haue no mutual conference with them.

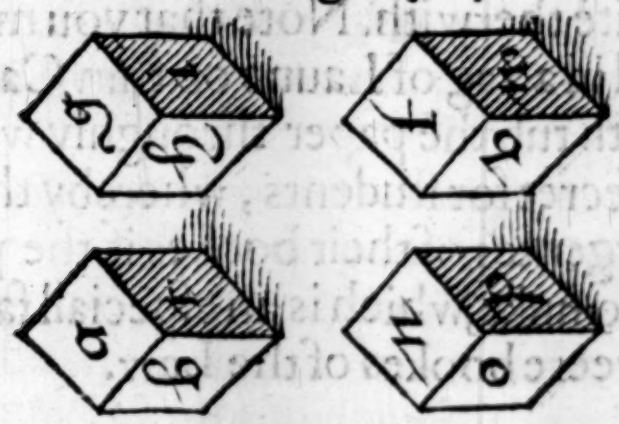
42 How to paint or limne with the colours that are taken from hearbs or flowers.

SOme drie the leaues of hearbes or flowers, which carrie any deep colour in them, and if there be seuerall colours vpon one leafe, they deuide them, and keep each colour by it self, grinding the same vpon a Marble, and after keepe it in close glasses or leaded pots, sufficiently defended from the aire. If you grind the leaues of a white rose with a little Allome, it will giue a yellow colour, and so wil the purple part of the leafe of the flowerdeluce, ground with a little lime, yeeld a good and perfect greene. Some expresse the iuice of herbs or flowers, and then euaporat either in balneo or in the sun so much as wil ascend, spreding ỹ rest thinly vpō the bottoms & sides of small dishes, & after, then set ỹ same in the sun to dry, & then grind it with.

with gumme water as they haue cauſe to vſe it. Some infuſe the moiſt, and ſome the drie leafe with faire water, and ſo ſoone as the beautiful hew of the leaues begin to vade, they dreine away the water, and make an addition of freſh leaues thereunto, and ſo change their leaues often, that they may purchaſe to themſelues nothing elſe but the liuelie and bright tincture of euerie hearbe or flower. Thoſe two colours of the Roſe, & Flower-deluce I learned of maſter Bateman ſometime the perſon of Newington a moſt excellent lymner.

43 A readie way for children to learne their A.B.C.

CAuſe 4. large dice of bone or wood to bee made, and vpon euerie ſquare, one of the ſmall letters of the croſſe row to be grauen, but in ſome bigger ſhape and the child vſing to play much with them, and being alwayes tolde what letter chaunceth, wil ſoon gain his Alphabet, as it were by the way of ſport or paſtime. I haue hearde of a pair of cards, whereon moſt of the principall Grammer rules haue been printed, and the ſchoolmaſter hath found good ſport thereat with his ſcholers.



Gold Siluer Iron or Copper

44 To graue and inlay colours into Sol, Luna, Mars, or Venus, to ſhew in the nature of an Ammel.

FIrſt couer your mettall with a cruſt of waxe, and with a fine ſharpe toole when the ſame is cold, cut out the ſhape or proportion of what letters or other

Aqua Regis or Aqua fortis.

portrature you pleaſe and of ſome reaſonable largeneſſe, then poure ſome ſtrong water in thoſe emptie places, and when you find them deep inough grauen, mingle Orpiment and Maſticke melted togither for a yellow colour, and Vermillion with Maſticke for a red, and ſo of all other colours. Now when your Maſtick hath bin molten togither with any of the aforeſaid colours, let it coole, and beat the ſame into powder, and lay of that powder within the grauing, & after lay the mettal vpon the fire, til the maſtick melt, & it will remain faſt and firme therein a long time. This of a Iew that yet liueth for ought that I know.

45 To make bad paper to beare ynke in ſome reaſonable manner.

RVb your paper wel ouer with the fine powder or duſt of Roſen and Sandrach mingled in equall parts before you write therwith. Note that you muſt tie the powder hard in a rag of Laune or thin Cambrick, and therewith rub the paper throughly well. This is a neceſſarie ſecret for ſtudents, whereby they may note in the margentes of their bookes if the paper ſhould happen to ſinke, which is an eſpeciall fault in many of our late yeere bookes of the Law.

46 To make an egge to ſtande vpon an ende without anie helpe at all.

THere is an olde tale of a good workeman who made an egge to ſtand in ſalt vpon an ende, but here the ſame is more artly performed, and yet without any ſuch ſupportation. Holde an egge in your right hande, and with your fiſt giue three or foure good ſtrong blowes vppon your lefte arme, or

vſe

vſe anie other deuiſe by agitation or ſhaking, vntill you haue broken the yolke, and ſo made the white to mingle confuſedly with it, and then it will preſently ſtand vpon the broad end on an euen table. It ſhould ſeeme that before the breaking of the yolke, that the yolke did hang playing or tottering within the white, whereby the egge could not be made to ſtande ſpeedilie without this deuiſe. And yet I heard a Gentleman whom I dare beleeue in a greater matter than this, affirme that hee hath diuerſe times cauſed an egge to ſtande alone by peyzing it to and fro betweene his handes, till in the ende it ſtoode vpright without anie other helpe. But the firſt is the readier way.

47 To harden the white of an egge into an artificial gum.

BEate the whites of diuerſe egges into a thinne and cleare Oyle or water, put the ſame into bladders, and hang them in your kitchin Chimney where a fire is vſually kept in the day time, and in a few dayes the ſame will become as hard as gum Arabicke. This I haue often proued. Some performe the ſame in the Sun onely. *Qre.* to what vſe this gum will ſerue.

Multa ouorum albumina ſimul exagitabis, iis veſicam impleas, inde in ollam aquæ plenam feruentis immittas, ac diu cuoqui ſinas, detrahe, & per multos dies deſiccari curabis loco tamen non puluerulento, & ſic lapideſcit vt in vitri duritiem tranſeat. Wickerus in libro de ſecretis fol. 532. citat. Bap. Port. authorem iſtius ſecreti.

Heere wee may note the diuerſe and ſundrie effects wrought by the ſeuerall degrees of fyre. We ſee a continuall whote fire dooth roaſt an egge till

it

it become extreeme hard but yet the nature of foode remaining, an intermiſſiue heat bringeth forth a gum altogither vnfit for nouriſhment, and a gentle or natural heat engendereth a chicken that is good meat, but not before it hath receiued ſome alteration by an outward and elementall heat. I will not vrge this philoſophicall point of fire any further, onely I wiſh that he that is a true maiſter of this element were my maſter alſo for a time.

48 A cheape Candle or Lampe for the poorer ſort to vſe in their howſes.

DIp Candleweeke in molten roſen, then wet your hands in water, and after you haue dipped euery weeke, you muſt ſtretch it out at length, or ſtreighten it betweene your fingers, and ſo lay them to coole vpon a halfpace or floore of ſtone. I thinke the refuſe of olde ropes and cordage would be a very profitable weeke for this purpoſe. This concluſion although it haue beene in ſome ſort already publiſhed by meane perſons both in towne and countrie, and giuen ouer by the inconuenience of the exceſſiue ſmoke onely which annoieth the whole room exceedingly wherin it burneth, yet mee thinkes that during the deare price of tallow candles, the poore might make ſome ſhift or other with them, as either by ſetting the candle within the Chimney, or elſe in a Candleſticke ouer the mantletree with a large wide tunnell made of wicker, and couered with paper, and hauing an elbow which might paſſe through ſome large hole into the chimney whereby the ſmoke may be auoided. Theſe candles I know will not exceed halfe the price of the woorſt weeke candles that are to bee bought.

But

But for thoſe that can content themſelues with the light of a Lampe (and I am ſure the ſame will ſerue for watching Candles, and yet bee much eaſier in price) let them buy Rape Oyle, which for the moſte part is to bee had after two ſhillinges the Gallon, and therwith maintaine their Lamps, vſing a ſmall weeke of a fewe foldes onelie, or rather a Candle-ruſh in the Socket of their Lampe, and ſo they ſhall finde that one pint of oile will laſt them an hundred hours, whereas a pound of watching candles will bee ſpent in threeſcore, or threeſcore & ten houres at the moſt, and yet they are dearer by one pennie in the pound. Note that the weeke or ruſh muſt ſtande a little ſloping in the noſe of your Lampe. Or if you would vſe your Lampe in ſteade of a watching candle, and to maintaine a light onely, then may you take a prettie large beere Glaſſe, placing your weeke vpon a wier, being platted like a trefoile in the bottom, the wier it ſelfe being firſt thruſt through a litle round flat peece of Leade of the bigneſſe of a two pennie peece of ſiluer, to make it ſtande the ſteddier. The weeke muſt be faſtened to the wier with a thred of Cotten loſely bound about it. When you haue placed this weeke in the middeſt, then poure in either oile or ſuet round about it, and ſo kindle your Lampe, and it will giue ſome light alſo through the Glaſſe. Note that your Glaſſe may not be too large, leaſt that the week grow to a cole before the Oyle can conſume away faſt inough to giue it paſſage vnto freſh weeke thereby to maintaine his light the better. But if you woulde haue your Lampe to laſt the longer, but to giue no light at the ſides, nor greatly at the toppe, then ſet your Glaſſe in a deepe Baſon or potte of water, thereby to keepe the Oyle the cooler, and ſo it will

alſo laſt the longer. And it is not amiſſe, nay it is verie requiſite to put in ſome water into your Glaſſe before you put in the Oyle, thereby to keepe the oile from burning. Neither can I heere omit or paſſe ouer in ſilence that one more ſpeciall vſe of a Lampe than anie Candle can affoorde, which is the ſafetie of your light from beeing caryed to and fro in the night time with Rattes and Miſe, which haue oftentymes ſet Mattes on fire with the flame of a Candle as they haue ſought to conuey it into their Neſtes. Neither woulde I willingly ſtudie by anie other Candle, becauſe it continueth ſo long in one equall light, without giuing that offence to the eye which the Candle dooth by his preſent blaze after it is newlie topped, and by his dimneſſe if it bee not often topped; If it were poſſible to haue ſtore of that Oyle of Beech-maſte (which a late Writer dooth vndertake to produce in great quantitie from the Nutte, and which I haue knowne expreſſed in England, but not with ſuch yeelde, the difference whereof maie peraduenture bee found in the diſtinct natures of the Engliſh and the Naple Nut) or of that *Oleũ Palmæ*, which is taken at this daye to bee the Oile that iſſueth out of the Date tree, the burning whereof is moſt ſweete and delicate in a Lampe, as I can teſtifie by the triall of ſundrie nightes wherein I vſed no other watching Candle in my bedde Chamber. Let this ſuffice to haue ſpoken of Lampes for this time, and vntill I may obtaine more leyſure and more libertie to lighten a newe Lampe that will giue more light then a Creſſet in ſome of the darkeſt corners of this lande.

49 Howe to refreſh the colours of olde peeces that bee wrought in oyle.

SOme vſe to beate the duſt off them with a Foxe taile, or with a bruſh offeathers, and after rubbing them ouer with a Spunge and warme Vrine. This way was commended vnto mee by maſter Bateman, ſometime parſon of Newington, a man whom for diuerſe good partes that were in him, I can neuer ſufficiently commend. Others rubbe them ouer lightly firſt with a Spunge and faire water, and after there commeth no more ſoile then with a ſpunge and good old Linſeed oile, wherin ſomtimes for the ſpeedier drying they do put ſome burnt Alom or powder of glaſſe finelie ground. Some do vſe firſt to waſh ouer the pictures with ſope, and preſently after they be drie to verniſh them ouer. Note ẏ all this is intended in pictures not verniſhed before. *Vide poſtea, num. 72.*

50 An excellent cement for broken Glaſſes.

TAke one part of *V*irgin-wax, and two parts of the teares or cleare drops of Maſticke, and cement therwith. But the better way is if you beat the whiteſt fiſhglew you can get with a hammer till it begin to waxe cleare, and then cut the ſame into verie ſmall and ſhort peeces, ſuffring the ſame to diſſolue vpon a gentle fire in a little leaded pan with a fewe drops of *Aquavitæ*. Then let ſome other that ſtandeth by, hold both the peeces ẏ are to be cemented ouer a chafing-diſh of coles till they be warme, & during their heat lay on the diſſolued glew with a fine penſil, then bind the glaſſe with wier or packthred, & let it reſt till it be

colde. With this cement I did ſee a Dutch Ieweller (dwelling then in the Blackfriers, but ſince departed this world) cement two of her Maieſties chriſtal cups that were brokē. Some cōmend vnſleakt lime, wheat floure, and the white of an egge. Others like fiſhglew, with *Aqua vitæ* and Ceruſe, or with the teares of Maſticke, *Aqua vitæ*, and Ceruſe. A ſingular workeman did highly commende vnto mee Renniſh wine, and Iſinglaſſe or fiſhglew for this purpoſe.

51 How to drie gunpowder without all danger of fire.

ALthough I do not hold this for any great ſecrete, yet becauſe there hath much miſchiefe & ſpoile of men happened onely by the retchleſſe drying of powder, I haue thought it requiſite and neceſſarie in that reſpect, and for the preuention of all daungers to come, to publiſh the ſame. Cauſe then a veſſell either of Lead, Pewter, Latten, or Copper to be made, hauing a double bottome, betweene which bottomes you maie conuey ſcalding water at a pipe, which water may alſo bee heated in another roome, for the more ſafetie agaynſt the fire, and then you may lay your powder vpon the vppermoſt bottome till it bee drie, and when the water beginneth to coole, you may let it out at a Cocke in the bottome of the Veſſell, and ſo giue paſſage for more ſcalding water into the Veſſell by an other Cocke which may be faſtened in the pipe that runneth into the veſſell, Or hauing a little pipe in the ſide, you may from time to time with a funnell poure in ſcalding water at your pleaſure, & this is done both with leſſe coſt, and alſo leſſe circumſtance. I do vſe when I would dry my powder in haſt, to heat a fireſhouel by diſcretiō, & thē

I lay

I lay a paper thereon a prettie while, and if I ſee that the paper burne not nor take fire, then I doe ſpreade my powder vpon the paper, ſtirring it vp and downe till it leaue ſmoking. And this I haue alwaies found to be a verie readie and a ſafe way. Some dry their powder in a ſtoue, where no fire can come neere to endaunger it.

52. To draw Fiſh to a certaine place in the night time, by a light or candle.

PVt ſo much filed lead into an vrinall as will make it ſinke, and vpon the lead ſtrew ſome hearbes, and vpon thoſe hearbs ſome glo-worms, couer the glaſſe with a corke and lute it well, and about the necke of the vrinall tie a ſtring, which muſt bee put through a great corke that may keepe the vrinall ſwimming in the water at what deapth you pleaſe. Note that with ſome pipe or quill, you muſt conuey ſome ayre into the glaſſe, for elſe the glo-wormes will die, and then I thinke their ſhining brightneſſe will vaniſh awaie, and therefore thoſe perpetuall lights are meerelie fabulous and fantaſticall that are drawne from theſe diſtilled wormes and Mercurie togither. Some nip or lute a glaſſe hauing crude Mercurie therein, and ſo hang it in the water as before. Alſo a candle helde either euen with the water, or ſunke a little way into the water, will amaze and drawe the fiſhes vnto it, ſo as if you haue a little hoope net, vpon the ende of a cane or pole, you may eaſilie take them, and bring them to the brinke-ſide. All theſe experimentes are beſt performed in a darke night.

53. A Bait to catch fiſh with.

TO halfe a hotte halfe penie white loafe, take one ounce of Cocle ſeed (*Qre.* if *Coculus indiæ* be not better) one ounce of Henbane ſeed finely powdered, temper the ſame wel with ſtrong *Aqua compoſita* into a paſt, then diuide your paſt into ſmall peeces, of the bigneſſe of a graine of wheate, and caſt in a handefull of them at once, ſomwhat aboue the place where the fiſh doe haunt, if it be in a riuer. This ſerueth eſpeciallie when you ſee the fiſh to flote, but for the cheuen you muſt make your baites as big as cherrie ſtones, and put them in little coffins of paper, & then throw them vpon the water. This ſecret I haue not proued.

54. *How to driue fiſh into a Tramell.*

PItch a tramell ouerthwart a riuer where there is good ſtore of fiſhe, then goe vpwarde againſt the ſtreame a prettie waie from the net, and as you come downeward againe with the ſtreame, throw in ſome lime ſtones here and there diſperſedlie, on both the ſides of the riuer. Theſe vnſlaked limeſtones wil make ſuch a crackling in the water, that no fiſh dare return backe againe vpon them, but will run forwarde and maſh themſelues in the tramell. This *I* had of *Iohn Heſter*, one of the moſt auncient chimiſts of my time in London, in exchange of one other ſecret which I diſcloſed vnto him. Yet ſome be of opinion, that you muſt hurle in whole handfuls at once now and then, whereby the fiſh hearing ſo great a noiſe, and taſting the ſtrength thereof in the water, may bee the more affrighted.

55. *Diuers good baites to catch fiſh with.*

Fiſh

FIll a ſheepes gut with ſmal vnſleakt limeſtones, and tie the ſame well at both endes, that no water get therein, and if any pike deuoure it (as they are rauening fiſh and verie likelie to doe) ſhe dieth in a ſhort time, you may faſten it to a ſtring if you pleaſe, and ſo let it flote vpon the water. Alſo the liuer of euery fiſh is a good baite to catch any fiſh of the ſame kind. Paſt made of vvheate flower, a little ſaffron and ſome ſuger, and tempered with water, is a good baite to angle withall for roche, daſe, &c. Alſo if you gather dunghill wormes, or from vnder a block, and take the earth from them, and put them into fine clean moſſe, ſuffering them to ſcowre themſelues three or foure daies therein, the fyſh will bite the better at them.

56. A readie waie to catch Pigeons, and other great birdes.

MAke ſmall coffyns of paper, (ſuch as the Confit-makers vſe to put their confites in) not exceeding the length of ones finger, paſt the ſides & endes with ſome ſtarch, clip the vpper part of them round with a paire of ſheeres, then annoint the inſide of the vppermoſt skirts of them round about with birdlime in the forme of a ring, and after you haue procured the pigeons to haunt a place, by making of a ſhrap a day or two before, lay of theſe coffyns heere & there with a few peaſon in euerie one of them a little ſloping or declining, and ſtrewe ſome other peaſon amongſt them. And when the Pigeon pecketh at the peaſe within the coffyn, ſhee is immediatlie masked or hooded, not ſeeing which waie to flie. And ſo you ſhall fynde verie good ſport, and take them eaſilie.

57. A Worme to catch birds with.

THere is a great opinion conceiued of a Worme that hath many feet and is found in a horſe-mill, where corne is ground, moſt commonlie vnder the ground where the horſe treadeth, and is exceeding ſweet, place this worme with lime twigs about her, where ſhe may be ſeen, and you ſhal ſoone take birds therewith. But I take this rather to bee the worme wherein the Nightingale dooeth ſo much delight, which is found in a mil-caſe, or where Bakers vſe to boult their meale.

58. How to catch Pigeons, Crowes, Iacke-dawes, and Magpies.

FOr the taking of pigeons, you muſt make a ſhrap three or foure daies together, laying loſe lines amongeſt the peaſe vntill the Doues bee acquainted therwith, then in ſom euening tie at thoſe lines great ſtore of ſtrings, which with a needle before, you muſt thruſt through the peaſe, being firſt ſodden ſofte for the purpoſe, and at the end of euery ſtring tie a little knot, when a pigeon hath ſwallowed downe one of theſe peaſe, together with the ſtring, ſhe cannot poſſiblie get it vp againe, but ſhe is eaſilie taken. Perhaps ſome other birdes may alſo be taken in this manner. It is not amiſſe to hide the threeds neare the peaſe with graſſe, earth or ſtraw, or ſome ſuch like matter. Alſo if you throw gobbets of fleſh or cheeſe curds abroad in the fieldes where there be ſtore of Rookes, Crowes, Dawes, or Magpies, within the which there is conueied ſome of the powder of *Arſenicke* or ſubli-

ſublimate, you ſhall ſoone diſpatch your barnes and other Garners of corn, of al theſe waſtfull birds. But take heed that none of your hogges doo eat of theſe dead birds, leaſt they happen to poiſon them alſo.

59. How to kil Seapies, Seaguls, & other rauening water fowle.

SOme be of opinion that if in the winter time, you doe ſtreine ouerthwart a riuer or brooke, where fowle doe haunt, ſome ſtrong line or whipcorde, at the which you may alſo hang diuers other ſmaller threads, baited with garbage vpon hookes, of an apt ſize for them, that ſo they will hang themſelues, and be eaſily taken. Alſo for the taking of ſtore of ſeapies, you may lime ſome twigs which may be faſtened at ſmall fiſhes, and then laie the ſame vpon large leaues, ſo as the lime touch not the water, and the ſeapie ſtriking at the fiſh is taken with the lime twigs. And hauing taken one or twoe of them, then clippe their winges and ſo leaue them in the water, and all the ſeapies thereabout that are within hearing, wil come to helpe them, and continuallie flie houering ouer them, ſo as hauing your peeces charged you may diſcharge at the whole flocke as faſt as you can charge, for they wil not be driuen awaie.

60. How to gather great ſtore of Waſpes together, ſo as you may deſtroy them all.

SOme honie put into a pipkin, and the ſame placed ouer a gentle fire, the windowes of the roome being ſet open, will by the ſent and vapour thereof, draw all the Waſpes that are neere the place within

any reaſonable compaſſe, into the roome where you haue beſtowed the pot. Note that this muſt be done in an apt ſeaſon of the yeare, when as there bee ſtore of waſpes, and in ſome place where they haunt great lie. Alſo the waſpes will ſoone reſort to an earthen pot, wherein there is ſome raw fleſh, and when you haue drawne ſome ſtore of them together into the pot, then couer it and ſet it on the fire vntill you haue deſtroyed them all. This latter ſecret I hadde out of *Cardanus de rerum varietate, pag. 294.* but the firſt is more naturall and commaundeth farther off. Alſo if you ſet ſtore of iarre glaſſes in your Orchard, and about your houſe, where you ſee the greateſt haunt of them, with ſome decoction of honie and water, or water and ſuger, or any other ſweet wine or compoſition in them, leauing theſe pottes or glaſſes three partes emptie, they will not forſake theſe ſweete liquors, vntill they haue drowned themſelues therein.

61. How to keepe garments of cloth, or hanginges of Tapiſtrie, Dornickes, Saie, &c. from moath-eating.

BRuſh your apparell with an ordinarie bruſh, and ſo likwiſe your hangings, or elſe you may vſe a bruſh made of a figge frale, vntill you haue gotten all the duſt out of them, then bruſh them ouer throughlie wel twice or thrice euerie yeare as they hang, with a bruſh made of wormwood tops. And yet I thinke it to be the ſurer waie, if they were alſo wel rubbed with wormewood on the backſides. I haue heard that it is an vſuall practiſe amongſt the Italians here in England in ſummer time to cauſe great ſtore of Walnut tree leaues to be hoong vpon a thread, ſo as one may

not

not touch another, and when they are throughlie drie, then ſtrewe them in their Cheſtes and Preſſes, amongſt their cloathes and other furniture of their chambers and beds, and within the ſeuerall foldes of euery garment.

62. To helpe beere that beginneth to ſoure or is dead.

SOme put a handfull or two of ground malt into a barrell of beere, and ſtir the ſame and the beere wel together, and ſo make it to worke afreſh and become good againe. Some do burie ſower beere 24. houres in the earth, and thereby recouer it. Others adde new ſtrong beere to the old, and ſo the dead beere is forced ſometimes to worke againe to a new head. Some fetch it againe with chalke or lime, and ſome with oyſter-ſhels, and ſome throw a handfull of ſalt into a barrell of dead beere. A Ladie in this lande hath alwaies vſed to put in a handful of ote-meale into euery barrell of beere, when it was firſt laide into her ſeller, whereby hir drink did alwaies carrie with it a quicke and a liuely taſt. It is alſo very good to tilt your beere, when the veſſel is little more then halfe drawn off, for ſo you ſhall draw your beere good euen to the latter end.

63. To helpe a chimney that is on fire, preſentlie.

WHen you ſee the chimny on fire, forthwith get a large thick blanket or couerlet, and with ỳ help of twoe or three perſons, let the ſame bee held cloſe both aboue and below vnto the mouth of the chimney, ſo as no ayre may enter, and if you canne come eaſilie to the toppe of the Chimney, couer the ſame cloſe alſo, either with a fitte boorde, or elſe

with wet woollen cloaths, & ſo the fire wanting aire wil preſentlie go out and be ſmothered.

64. To haue ſtore of Seafiſh for the prouiſion of ones table, without repairing to the ſea for them.

SYr *Edward Hobbie* (as *I* haue heard) hath ſtored certeine dikes in the Ile of Sheppey, with ſundrie kindes of Sea-fiſh, into which dikes by ſluces, he doth let in from time to time, change of ſea-water to nouriſh them.

65. To make ale or beere to become ſtale, in a ſhort time.

BOttle ale, or bottle beere, being buried ſomewhat deepe in the ground, in a coole or ſhadie place, becommeth ſtale enough to bee drunke in 48. howers ſpace, as I haue beene aſſured by an honeſt and ſober Courtier.

66. How to ſteale Bees.

IF you place a Bee-hiue ſomwhat before ſwarming time in the mideſt of a great beech tree, ſo cloſe as that it may not be diſcerned for feare of ſtealing, the Bees wil reſort vnto the ſame, eſpeciallie if it bee firſt wel ſprinkled within with water and honie.

67. How to make a tallowe candle to laſt much longer, then it doth in our vſuall manner.

A *Neopolitane* hath written, that ſalt mingled with oile will make it to double his laſting, but I thinke the practiſer herof wil find it ſomwhat trobleſome to make a good ſolucion of ſalt in oile. For oile is an improper ſubiect to reteine ſalt. I haue heard an Iriſh practici-

practitioner affirme, that if tallow candles be made about Alhallontide of good ſtuffe, and preſently laide in colde water by the ſpace of 24. houres together, and then hung vp to drie in a coole and windie place vpon their ſtickes, that by this meanes onely they will laſt much longer than otherwiſe they would, and burne alſo much ſweeter. But I am ſure that if there be a true counterpeize giuen to a ſhort tallow candle, (ſuch as is vſually called the Goldſmiths candle) and the ſame afterwards let down betweene ones fingers into the midſt of a pale or tub of water, ſo carefully, as that the flame be not extinguiſhed in letting the ſame fal into the water, it will laſt as long as two candles of the ſame length and bigneſſe, alwayes ſupporting it ſelfe aboue the water, by a thin cruſt or webbe, which it worketh about the flame in the nature of Camphire, which continueth his burning in the water (being once ſet on fire) vntill it haue wrought a paſſage or entrie for the water into it ſelfe.

68 *How to tell the iuſt number of Apples, Nuts, Shillings, &c. as they lie in bulcke togither, how great ſoeuer the heape be.*

CAuſe the owner of them to diſpoſe of the whole heape in this maner. Firſt will him to lay downe two, then let him double that number likewiſe, and ſo continue in the rule of duplation vntill hee can double no longer, laying all the odde ones apart by themſelues, then ſhall you eaſily gheſſe by the preſent view of the whole number, how many there are in the whole heape. For either they muſt be 2. 4. 8. 16 32. 64. 128. &c. and which of theſe numbers ſoeuer it bee, euery reaſonable eye will gheſſe, the bulk of the one number dooth ſo much ſurmount the o-

ther. The like also may be done in trebling, and now and then doubling or trebling, the more to obscure the conceipt.

69 How to preuent drunkennesse.

DRinke first a good large draught of Sallet Oyle, for that will floate vpon the Wine which you shall drinke, and suppresse the spirites from ascending into the braine. Also what quantitie soeuer of newe milke you drinke first, you may well drinke thrise as much wine after, without daunger of being drunke. But howe sicke you shall bee with this preuention, I will not heere determine, neither woulde I haue set downe this experiment, but onely for the helpe of such modest drinkers as sometimes in companie are drawne, or rather forced to pledge in full bolles such quaffing cõpanions as they would be loth to offend, and wil require reason at their hands as they terme it.

70 An excellent tent for a Diamond.

BVrne Iuorie in a crusible or melting potte, being close luted, into a blacke powder, then take a little of the fine powder thereof, and mingle it with a few drops of the exrtacted Oyle of Masticke, and in the setting of the stone you must haue care that it touch not the tent.

91 How to make Oile or Vernish to drie speedily.

THis is done first by boyling of the oile to the consumption of the one halfe, or one third thereof, and then by the putting in the ashes of the backbones of Shads or Mackerell. Also diuerse Shaddes heades

heades dried in the winde, and hung vp in a darke place, will glister like Glow-wormes.

72 A strong Lee that will fetch out any steyne as also refresh an olde Oyle Picture, and make it verie faire againe.

TAke of the ashes of the Vine one handfull, of white coppres and burnt allom of each the quantitie of halfe a Walnut, put thereto a pint of conduit water, infuse the same vpon the said substances in an Ipocras bagge, & reiterate the water vpon them 4. or 5. times till it grow verie strong, set the said water on the fire, and put thereto the quantitie of an hasill nut of good Sope, then take the saide Lee so hote as you may well endure your hande therein, and after you haue taken off the dust from the picture with some brush or foxe taile: rub ouer the picture with a spunge till it come to a good lustre with the said Lee, and when the colours please you, then with faire water wash off the said Lee againe, and the peece or picture though neuer so olde will become verie fresh. *Qre.* if this secrete do not onely extend to such oile peeces as are not vernished. Some rub ouer pictures or Tables with an Onion cut through the midst. This secrete with the preceedent I had of a Dutch mountbanke, aud they came so hardly from him as if hee had beene extreemly costiffe. *Vide antea num. 49.*

73 To helpe Wine that reboileth.

IF anie sweete Wines happen to reboile in the hot part of the Summer (as I haue often seene, and as manie Vinteners to their great losse haue oftentimes

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times felt) then Placentius willeth a little peece or cantle of Cheese to be put into the vessell, and presently a strange effect will follow. *Hoc ex anchora famis & sitis.* I beleeue that the corporation of Vintners would giue twentie pound yearely to haue this secrete warranted to bee true. For the best remedy which they haue, is to draw the wine of from the lee into other cleane caske, thereby perswading themselues to coole the wine, and to stay the boyling therof. But after a while the inward fire oftentimes beginneth a fresh workmanship, and frustrateth all their labour. I would esteeme him for a learned Vintner, and worthie to haue the next auoydance of Bacchus his chaire, that could giue me the true reason of this reboiling of wines. But because I haue allotted so great a place of honour to him that can but shewe the reason onely thereof, therefore I will not presume nor professe to knowe the cause efficient, but I durst vndertake to perfourme the remedie, if I thought my reward would not bee somewhat like vnto his, that within this few yeares taught diuerse of the companie how to draw out of a Hogges-head of wine lees, 10 gallons of cleare wine at the least, which beeing trickt, or compassed, or at the least mingled with other wine, hath euer since by diuerse Vintners beene retailed for wine, whereas before it was wholie solde for lees to the *Aqua vitæ* men. And this is the reason why there hath neuer since been the like store of lees to make *Aqua vitæ* of, as before the discouerie of this conceit, and that the lees of many Cellors which before were liquid, are now become stiffe like paste, and may verie well be wrought vp into the forme of bals. And if I be not deceiued, the first practize thereof began in Pater noster row, and within these few yeares,

but I

but I feare by this time, it is a parcell of manie mens Creede that wil neuer be left til the worlds end. Wel, the poore fellow got hardly a good ſute of apparell amongſt diuerſe of them to whom hee diſcloſed the ſecrete, although ſome one of them could tell which way preſently to raiſe 30 or 40. li. *per annũ* vnto themſelues. And therefore I ſee it is no offring of skill in theſe dayes to Vintners. But the better courſe were to take a Tauerne and get a Hollibuſh if France were more open, and a litle more freed of the exceſſiue impoſt, and ſo to draw wines as artificially as the beſt of them. For I can aſſure you I haue almoſt the whole art as it is this day in vſe amongeſt the Vintners, written in a prettie volume entituled, *Secreta dei pampinei*. And if I durſt here ſo boldly as I could, both truly & largely write of thoſe iumbling ſleights, that are too often practized in our naturall wines by ſome of the Coopers of London, to the great benefite of the Marchant and Vintner, although themſelues, poore ſoules, get nothing thereby but the hooping of the veſſels, and now and then a Can of wine for their labours, a man would wonder from whence ſuch great varietie of iugling ſhould growe or ſpring, and howe theſe plaine fellowes that neuer read their Grammer, nay ſcarcely know their A, B, C, ſhould be able to run through Ouids Metamorphoſis as they doe at midnight. And yet I cannot altogither blame either the Cooper, or the Vintners man for practiſing of theſe alterations, tranſmutations, and ſometimes euen real tranſubſtantiations, of white wine into Claret, & old lags of Sacks or Malmeſies, with malaſſoes into Muſkadels. For we are growne ſo nice in taſte, that almoſt no wines vnleſſe they be more pleaſant than they can bee of the Grape will content vs, nay no colour vn-

leſſe it bee perfect, fine and bright, will ſatisfie our wanton eyes, whereupon (as I haue beene creedibly enfourmed by ſome that haue ſeene the practize in Spaine) they are forced euen there to enterlace now and then a lay of Lime with the Sacke grape in the expreſſion thereby to bring their Sackes to bee of a more white colour into England then is naturall vnto them, or then the Spaniardes themſelues will brooke or endure, who will drinke no other Sackes them ſuch as be of an Amber colour. This makes the Vintners to tricke or compaſſe all their natural wines if they bee a little hard, with Baſtarde to make them ſweeter, if they pricke a little they haue a decoction of honie with a few Cloues to deceiue the taſte, if they be clowdie or not perfect fine, they giue them either the white or the yellow parrell, according to the naturall colour of the Wines, wherein they muſt vſe Egges, Milke, Bayſalt, & Conduit water well beaten and laboured together with a ſtubbed rodde, and then wrought ſoundlie together with a parrelling ſtaffe, which parrell for the moſt part in one night (vnleſſe the Wines happen to haue a flickering Lee) will cauſe them to fine, whereby you may preſently drawe at certaine. But this is daungerous vnleſſe it bee in a houſe well cuſtomed, for that the Wine may not lie too long vpon his parell. And ſome Wines will not endure long after you haue racked them from their parell. Note the wholeſomneſſe of theſe Lees to make *Aqua vitæ* withall. But when the Wines doe rope or beginne to faile or faint in themſelues, either in ſubſtaunce or in colour, either by age, by the fault of Caske, ſoyle, ſalt water, or other accident, then manie tymes the Vintener is driuen to his hard ſhiftes, and then hee

hee helpeth himſelfe with Allome, with Turnſole, Starch, and with manie other Drugges, and aromaticall ware which hee fetcheth from the Apothecarie, the particulars whereof I coulde ſet downe and applie euen as they haue beene a long time (till within theſe fewe yeeres) practized in one of the moſt autentique Tauernes of my time. But my purpoſe is onely to put ſome in minde of their groſſe night-woorkes which diſcouer themſelues by Candlelight at their Celler Windowes, whiſhing them to leaue all vnwholeſome practizes for mans bodie, leaſt if they ſhoulde heereafter againſt my will force mee to publiſh them to the worlde, I ſhoulde drawe my Countrey men into ſuch a liking of our Royſton Grape, that in the ende they woulde for the moſt part content themſelues with their Engliſh and naturall drinke, without raunging ſo farre for forreine Wines.

74 The making of a Bragget, which is manie times miſtaken for a Muskadell by the ſimple ſort of people.

PVt one part of ſmal Alewoort that is blood warm with one part of clarified Honie according to the maner ſet downe num. 75. but put no Cloues therein in the clarifying. For the making of one Hogſheade of this Bragget which is aboute 63. Gallons, you muſt take nine Gallons of this clarified Honie, and 54. gallons of ſtrong new ale: when your clarified hony hath ſtood one day, then mingle the ſame with your newe Ale in a Hogſhead, firſt filling your Hogſhead halfe full before you put in your honie, and then hang this aromaticall cõpoſition following

in a long ſlender bag in the midſt of the veſſell vz. of Cinamon three ounces, ginger three ounces, greins 3. ounces, colianders one ounce, cloues one ounce, nutmegs one ounce, long pepper halfe an ounce, *Cardamomum* one ounce and a halfe, liquerice one ounce, then fil vp the veſſell almoſt full with the reſt of the new ale (yet ſome commend rather the putting in of the ſpices confuſedlie then in a bag) bee ſure to haue foure or fiue gallons or more of the ſame newe ale, to fill vp the hogſhead as it purgeth ouer continuallie. There is a leſſer hole neere the bung hole in beere hogſheads, which muſt ſtande open whileſt it purgeth, you muſt alſo be carefull in the beginning to giue ſome little vent to the hogſhead whilſt it worketh: in three or foure moneths, it will bee readie to drinke. You muſt haue a hazell ſticke of the bigneſſe of a good cudgell, ſo great as may well enter in at the round bung-hole, and when your hogſhead is about three quarters full, put in this ſtick, being ſawed croſwiſe at the end about one cubite in length, (the Vintners call it their parrelling ſtaffe) as the apteſt toole for this purpoſe. Beat with the ſaid ſtaffe the new ale and the honie togither a good prettie while, & when you haue finiſhed this agitation, fill vp the veſſel with the reſt, and let it purge as before. If you finde your muſcadell too thicke, after it hath ſtood 3. or 4. monethes, you may take a cane or pipe, made of Tinne plates, that will reach into the midſt of the hogſhead or ſomewhat more, ſtop the ende thereof and make ſome holes in the ſides, and with a funnell you may poure more newe ale into the Cane, and ſo make it thinner. This Cane is an apt inſtrument to conueie any liquor or compoſition into a veſſell of wine without troubling of the ſame, or turning vppe the lees, wherby

whereby you may draw the ſame fine preſently.

75 Howe to clarifie honie ſo that the taſte thereof ſhall be much altered.

PVt a gallon of water blood-warme to a gallon of honie, put in your honie firſt, and with a ſticke take the depth thereof in the veſſell wherein you boile it, and then put halfe an ounce of beaten cloues bound in a linnen cloth therein, and let them boile with the water and honie on a gentle fire till all the water bee conſumed, which you ſhall gheſſe at by the marke on the ſticke. Your hony muſt be pure and ſimple not mingled with woort, flowre, or other bad compoſition, euen as it is gathered vpon the breaking vp of the hiues. It is a worke of two or three hours, and the elder the honie is the better it ſerueth for this purpoſe. You muſt remember to take away the skum as it riſeth. Som boile this honie a little higher to a more conſiſtencie, and preſerue fruit therewith in ſtead of ſugar. Theſe two receits I had of an Oxeford ſcholler, who aſſured me that hee had often made proofe therof in the Citie of Oxford, and I know the man to be both of good conceipt, and verie carefull in the commendation of any ſecrete to his friend otherwiſe then may well ſtand with his owne credite.

76 A Receipt for the making of an artificiall Malmeſey.

TAke four gallons of conduit water, into the which put one gallon of good Engliſh honie, ſtirre the honie well till it be diſſolued in the water, ſet this water in a copper pan vpon a gentle fire, & as there ari-

ſeth any skumme take it off with a gooſe wing or a Skimmer, and when it hath ſimpered about an hour, then put in a new laid egge into the water, which will ſinke preſentlie, then continue your firſt fire without any great encreaſe, and alſo your skimming ſo long as any skim doth ariſe, and when this egge beginneth to floate aloft and ſinketh no more, then put in another new laide egge, which wil ſinke likewiſe, & when that ſecond egge doth alſo ſwim aloft with the fyrſt egge, let the water continue on the fyre a *Pater noſter* while, then take it off, and beeing colde, put the ſame into ſome roundelet, fylling the roundelet brim ful. And in the middeſt of this roundelet hang a bagge, wherein firſt put ſome reaſonable weight or peize, and to euerie eight gallons of liquor two nutmegges groſelie beaten, twentie Cloues, a raſe or two of Ginger, and a ſticke of Cynamon of a fynger length. Set your roundelet in the ſunne, in ſome hot Leades or other place, where the ſunne ſhineth continuallie for three whole monethes, couering the bung-hole from the raine, and now and then fylling it vppe with more of the ſame compoſition as it waſteth. This I learned of an Engliſh trauayler, who aduiſed me to make the ſame alwaies about the middeſt of Maie, that it might haue 3. hot moneths togither to work it to his ful perfection. But leaſt this way ſhould happen to faile you, I haue thought good for thy better ſecurity, to ſet down mine owne fanſie, for the eaſier ſtirring vppe of this Malmeſey to his workmanſhip. Let your veſſel bee ſuch as hath alreadie conteined ſome muſte or other liquor that hath wrought therin (for he that knoweth not the vſe of a worker is but a ſlender Artiſt) ſtop the ſame very cloſe and lay it in a conuenient Seller til it haue wrought ſuffy-

ſufficientlie, but in the working giue the caske vent by degrees, for feare of afterclaps. Or elſe you may eaſilie procure the ſame to worke, by adding of ſome yeaſt or ferment vnto it, and ſetting it warme, according to the vſuall manner of ale and beere.

77. *How to keepe Claret wine, or any other wine good, many yeares together.*

AT euerie vintage you muſt drawe off almoſt a fourth part out of the hogſhead, and then rowle it vpon his Lee, and after fyll it vp with the beſt newe wine of the ſame kind, that you can get. Your caske muſt be bound with iron bandes or hoopes, and alwaies kept full and tight. *I* haue heard that an Eſſex knight vſeth this practiſe, and hath Wine of nine or ten leaues (as they terme it) which is ſo many yeares olde.

78. *To keepe Wall-nuts greene and moiſt a long time, ſo as you may pill the kernell.*

TAke the ſtampings of Crabs after the veriuice is expreſſed from them, lay your nuts therein one by one, ſo as they touch not one another, and ſo make *ſtratum ſuper ſtratum* till your veſſell be ful, theſe will laſt ſome two or three moneths as I haue beene credibly enformed by a gentlewoman that hath made proofe thereof.

79. *How to keepe the gloſſe of Spaniſh Leather ſhooes, or buskins, a long time.*

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THe blacking of a Lampe tempered with the oyle of Almondes or ſome other ſweete oile, is verie good for this purpoſe. I know a gentleman that doth vſe to rub his ſpaniſh leather ſhooes with the backeſide of a peece of freeſe-leather, but you muſt haue care to keepe this kinde of leather verie drie. Some maintaine the gloſſe of this leather, with a peece of black veluet onely.

80. How to helpe ſmoking Chimnies.

IF the Chimnies bee large, and carrie ſome good length and breadth with them, then may you erect or builde a falſe back & ſides to your ſmoking chimnies, ſo as there may be a diſtance of three or four inches betweene the olde backe and the new, raiſe this new worke a foot aboue the mantletree. Warranted by a Gentleman of Ireland, being a great practiſer in artificiall concluſions, *&c.*

81. Tinder and match of a new kind and ſweet.

TAke the light & thin ſhauings of drie fir boords, light them with a candle, and when they are almoſt burnt, put them out as you woulde doe Linnen rags, after the flame is paſt, in a ſtone pot. Then laie another thin ſhauing thereon, and with a ſteele and flint ſtone ſtrike fire into this tinder, and blow therein till this new ſhauing doo kindle and ſo light your candle, and then put out this laſt ſhauing in ſome reaſonable time, and it will helpe to increaſe your Tinder. This I haue ſeene a Dutch Ioiner vſe oftentimes in the lighting of his Candle. Note here that your match

match and your tinder is all of one ſubſtance or matter. Alſo you may make ſweete matches to your ordinarie tinder in this maner. Cut or thwite a number of ſmall Iuniper ſtickes, with ſharpe points like picke toothes, and dip them but a little waie, and that very lightly in Brimſtone, and when the brimſtone is ſpent the Iuniper will burne ſweetlie.

82. An excellent mixture, to make pewter bright withall and to take out the ſtaines.

TO a gallon of ſtrong bucke Lee, put halfe a pound of blacke ſope, and a reaſonable handefull of the duſt of Flaunders tile, which you ſhall make by rubbing one againſt another. Boile them well together til they become like pappe or birdlime. This will laſt a whole yeare. You muſt onely haue care to beſtowe good labour vpon the veſſel if you meane to vſe this ſcowring.

83. To defend a Horſe from flies in his trauaile.

STeepe *Arſmarte* in water, making the water verie ſtrong of the hearbe, and therewith waſh your horſe before you meane to trauell.

84. To kill Rats in a Garner.

BE ſure there be no holes in the bottome or ſides of your garner, or any where elſe, ſauing aboue the boords which you muſt place ſheluing wiſe, or in the maner of a penthouſe throughout the garner, about halfe a yard or two foote from the corne, ſo as when the Rats haue leaped downe into the bulke of corne,

they ſhall not be able to riſe or bolt vp againe before you haue ſped them.

85. How to take away the offence of noiſome vaults.

MAke the vent thereof vpwarde as large or larger then the tunnell downward, and carrie the ſame vp to a conuenient heigth, for ſo the offenſiue ayre as faſt as it riſeth hath iſſue and ſtayeth not in the paſſage

86. Sweet and delicate dentifrices or rubbers for the teeth.

DIſſolue in foure ounces of warme water, three or foure drams of gumme Dragagant, and in one night this wil become a thicke ſubſtance like gellie, mingle the ſame with the powder of Alablaſter finely ground and ſearſed, then make vp this ſubſtance into little round rowles of 4. or 5. inches in length. Alſo if you temper roſet or ſome other colour that is not hurtfull with them, they will ſhew full of pleaſing veines. Theſe you may ſweeten either with roſewater, ciuet, or muske. But if your teeth be verie ſcalie, let ſom expert Barber firſt take off the ſcales with his inſtrument, and then you may keepe them cleane with the aforeſaid rowles. And heer by thoſe miſerable examples that I haue ſeene in ſome of my neareſt friendes, I am enforced to admoniſh all men to bee carefull, how they ſuffer their teeth to be made white with any *Aqua fortis*, which is the Barbars vſuall water, for vnleſſe the ſame be both well delaied, and carefullie applied, a man within a few dreſſings, may be driuen to borrow a ranke of teeth to eate his dinner

ner with, vnleſſe his gums doe helpe him the better.

87. To helpe either man or horſe that is tender in the foote or hoofe, whereby they cannot endure any great trauell.

LEt him that trauelleth much and hath this infirmitie, put in each ſock before he draw on his hoſe a new laid egge ſomewhat groſelie broken, and ſo let him trauell vpon them. So likewiſe you muſt put in two egs a little beaten into either hoofe of the horſe, and clap cow dung vpon them, and then wrap them well one night that they fal not out, and after you may trauel him any reaſonable iourny. This is much vſed in Italie.

88. How to keepe Oyſters good 10. or 12. daies.

SOme hold opinion that if you barrel them vp whileſt they are new and quick at the Sea ſide, putting ſome of the brackiſh water where they are taken amongſt them, that ſo they wil laſt manie daies good. *Qre.* Of diſſoluing of ſome ſalt in freſh water til it bee of one ſtrength with the brackiſh, which conteineth ſome eighteenth or twentith part of ſalt, peraduenture it wil not be amiſſe to change your brine now & then. Some pile them vp in ſmal roundelets with the hollow parts of the ſhels vpward, caſting ſalt among them at euerie laie which they make. This is a good deuiſe to ſend them far into the Countrey, where oyſters are deintie and ſold by tale.

89. To keepe Lobſters, crayfiſhes, Prawnes, Shrimpes, &c, ſweet and good for ſome few daies.

THese kind of fysh are well noted to bee of no durabilitie or lasting in warme weather, yet to prolong their daies a little (though I feare I shall raise the price of them by this discouerie amongest the Fishmongers, who onely in respect of their speedy decay doo now and then affoord a penieworth in them) if you wrap them in sweet and course rags first moistened in salt water, and then burie these cloaths in Callis sande, that is also kept in some coole and moist place, I knowe by mine owne experience, that you shall finde your Labour well bestowed, and the rather if you lay them in seuerall cloathes so as one doe not touch the other.

90. An artificial composition, wherwith to make smooth glistering and hard floores, or to plaister wals with.

TEmper Oxe-bloud and fine clay together, and lay the same in any floore or wall, and it will become a verie strong and binding substance, as *I* haue beene told by a gentleman stranger, who affirmed vnto me that the same is in great vse in Italie.

91. To make parchment cleere and transparent, to serue for diuers purposes.

MAke choice of the finest and thinnest parchment you can get, scrape the same ouer with a knife till it become verie thin, (but first you must wet it wel in water) then straine it vpon a frame, and fasten it well, and when it is drie oile it all ouer with a pensill, with the oile of sweet Almonds, oile of turpentine, or oile of spike, some content themselues with linseed oile, & when it is thorow dry, it wil shew very cleere, & serue in

in windowes in ſteade of Glaſſe, eſpecially in ſuch roomes as are ſubiect to ouerſeers. You may draw anie perſonage, beaſt, tree, flower, or coate armour vpon the parchment before it bee oyled, and then cutting your Parchment into ſquare panes, and making ſlight frames for them, they will make a prettie ſhew in your windowes, and keepe the roome verie warm. This I commend before oyled Paper, becauſe it is more laſting, and will endure the bluſtring and ſtormie weather much better then paper.

92 A profitable and cheape morter for building, wherin either no Lime, or ſmall ſtore of Lime ſhall bee requiſite.

A Wiſe, wealthie, and ancient Sopeboyler, dwelling without Algate, hath for the better encouragement of others, long ſince erected a faire and ſtately edefice of brick for his owne habitation, vpon the good ſucceſſe whereof he hath alſo verie latelie built one other houſe of ſome charge and good receipt, the morter whereof did conſiſt of two loades of waſte ſope aſhes, one load of lime, one load of loame, and one load of Woolwich ſand. So likewiſe one other of the ſame facultie, being likewiſe of good credite and great experience, hath vſed onelie loame and ſope-aſhes tempered and wrought together in ſtead of morter, whereby he hath laid both the foundations, chimneys, and their tunnels in his dwelling houſe in Southwarke, and they haue endured thoſe ſtormes alreadie which haue ouerturned manie other both new and olde tunnels that hath beene built with the ordinarie morter. It may be that many limemen, and ſome of thoſe Bricklayers that are in fee

with them may bende their force againſt this newe practize, and labour to diſcredite the ſame by all meanes poſſible, but there is no reaſon that can holde agaynſt experience, nor no malice ſo great, but that trueth in her time ſhall bee able to vanquiſh. And if theſe three tryals ſhall not bee thought a competent number to giue credite to a new inuention, I will vppon reaſonable requeſt and warning, backe and confirme them, with threeſcore more at the leaſt, which I can produce alreadie made and executed within the Citie of London and the Suburbs thereof, inſomuch that who ſoeuer will take a carefull view of all our late buildinges that conſiſt of Brickwoorke (eſpecially within the Suburbs of the Citie) hee ſhall finde great ſtore of theſe waſte aſhes to be imployed in them.

93 A conceipted drinking Glaſſe wherein many ſortes of fiſh will ſeeme to ſwim vp and downe.

IN the middeſt of a good large drinking-glaſſe, and of a bole faſhion, let a ſhort piller of Glaſſe ariſe, vpon the which a rounde Globe or Ball of Glaſſe muſt be placed, vpon which Ball there muſt bee diuerſe ſortes of ſmall fiſhes well drawne and limned, then fill the Glaſſe either with water, or with white, or Renniſh Wine, and the leaſt motion that can happen, either to the Wine or water, will make the fiſhes ſeeme to play vp and downe within the Glaſſe.

94 Howe to diſſolue golde, or to part it from guilt ſiluer, without melting downe the ſiluer.

Diſſolue

DIſſolue ſome *Sal Armoniacke*, in ſome good *Aqua fortis*, whoſe fæces (fixes the Goldſmiths vnproperly tearme them) haue beene firſt ſtriken down with ſome fine ſiluer, or elſe ſtill by retort the ſaide *Aqua fortis*, from good ſtore of Bayſalt firſt calcined, ſet ſome of this water in a parting glaſſe vpon warme imbers, and put therein your guilt ſiluer, and it will ſtand in the forme of a golden water. You may gather your golde againe either by euaporation of the water, and ſo the golde will ſettle in the bottome, or elſe if you put Mercurie therein it will amalgame with it, which Mercurie will ſoone flie awaie in fume, being put into a Cruſible, and leaue the Golde behinde. *I* doe hold this to bee a verie profitable ſecrete for the Goldſmith, vnleſſe the Mercurie in the firſt guilding of the ſiluer doe conuey ſome part of the Golde ſo farre within the ſiluer, as that the water can make no ſufficient penetration vnto it. For by this meanes all the charge of teſting and parting wil be ſaued, which (as I take it) will not bee much leſſe then foure pence vpon euerie ounce. But whereas it hath beene obiected by ſome Refiners, that by this meanes there will be much golde loſt (eſpecially in ſuch auncient plate as hath beene made and perhaps melted down againe before the arte of refining which is of a *puiſne date* was found out, for that this water doth only take holde of ſuch gold as doth enuiron the outſide of the ſiluer) I holde this to be a weake obiection to diſcourage any man from the practize of this ſolution, for that in ſuch plate as either carieth no touch, or ſo old a touch as the buier ſhall not bee acquainted withall, he may follow the old refining rules: and in ſuch guilt plate as hath beene made ſince the arte of refining

hath first beene vsed amongst vs (which is the most vsuall plate that is bought and sold in these dayes (he shall finde the same a most beneficiall practize, if the first doubt may be salued. Which may easily be proued in one ounce or two of guilt siluer, making a straite obseruation howe much golde was bestowed thereon.

95 Howe to knowe when the Moone is at the full by a glasse of salt water.

IT hath beene creediblie reported vnto me, that if an ordinarie drinking glasse bee filled brim full, a little before the full of the Moone, that, euen at that instant when the Moone commeth to the full, the water will presently boile ouer.

96 How to melt downe the filings of yron, nailes, or other small peeces of yron with a small fire.

TO three partes of yron put one fourth part of Antimonie powdred, in a crusible or melting pot, set the same in any ordinarie forneste, and blowe a little with a paire of bellowes, (or else for your more ease you may vse a winde forneste) and you shall finde the same to melt verie speedily. This way you may easily cast both Musket and Caliuer bullets of yron.

97 How to put seuerall liquors or Wines in one Glasse, without mixing.

TAke a Beere glasse of six or eight inches in height, and being of one equall bigneste, from the bottom to the toppe, then powre therein some faire water,

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an inch or two in height, vpon the which lay a round trencher that is almoſt equall in compaſſe with the Glaſſe. Then out of a long ſpowted Glaſſe or pot, poure gently ſome milke vppon the Trencher, and after that ſome Rochell or Connyacke white wine, and then ſome Gaſcoigne Claret wine, and after Sacke, and ſo you ſhall haue each liquor or wine to flote vpon the other without mingling togither, becauſe the fall thereof is broken by meanes of the gentle pouring vpon the trencher. Some holde opinion that the ſame may alſo bee perfourmed with a round toſte. But I thinke that you muſt haue a ſpeciall care herein, that the heauieſt liquor do lie in the bottome, and that you proceed from lighter to lighter, ſo as the lighteſt or moſt aereous or fierie bee placed vppermoſt, for each thing deſires to bee in his naturall place.

98 The Art of memorie which maſter Dickſon the Scot did teach of late yeres in England, and wherof he hath written a figuratiue and obſcure treatiſe, ſet downe briefly and in plaine termes according to his owne demonſtration, with the eſpeciall vſes thereof.

YOu muſt make choice of ſome large edifice or building, whoſe Chambers or Galleries bee of ſome reaſonable receipt, and ſo familiar vnto you, as that euerie part of each of them may preſent it ſelfe readily vnto the eyes of your minde when you call for them. In euerie of theſe roomes you muſt place ten ſeuerall ſubiectes at a reaſonable diſtaunce one from the other, leaſt the neereneſſe of their placing ſhoulde happen to confound your Memorie. Your ſubiectes muſt conſiſt of Decades, whereof the firſt

is a man, and the fifth a woman, or rather the wife of that man which beginneth the Decade. And by this meanes your first your, fift, your tenth, your fifteenth, and your twentieth ſubiect, &c. Both forwarde and backewarde is eaſily brought to minde. The reſt of the ſubiects in euerie Decade may be ſuch as are meerly differing the one from the other, vnleſſe you ſhall like to haue ſome few of them reſembling the profeſſion of him that beginneth the Decade. As for example, if you begin with the Souldier, you may take a Drumme and a Target for two of the ſubiectes in that Decade. But if you place too manie ſubiectes of one nature within one Decade, you will finde them verie troubleſome to remember. Theſe ſubiectes woulde bee ſuch as are moſt apt either to bee agents or patients, vppon whatſoeuer you ſhall haue cauſe to place in them. And therefore a fire, a Dunghill, a Carte, a paire of Bellowes, a Tubbe of water, an Ape, a Shippe, a night-gowne, a Milſtone, and ſuch like, are apt to make your ſubiects of, wherein you may place all ſuch thinges as you woulde remember, and as Maiſter Dickſon tearmed it, to animate the *vmbras* or *ideas rerum memorandarum*. But heerein euerie man may beſt pleaſe his owne witte and memorie. Nowe to proceede to the placing of theſe tenne ſubiectes, in their tenne local roomes, you maie beginne with a Souldier, whome you may place euen in the doore or entrance confronting with a ſterne and warlike looke all ſuch as ſhall offer to enter that roome, whereof hee taketh the charge, you maie alſo imagine him with Flaske, Touch-boxe, Morion, Peece, Swordc and Dagger, &c. Becauſe you may happilie haue occaſion in the placing of ſome harde woorde, to vſe

ſome

ſome one of theſe more fitlie then the other. Your ſeconde place maie bee your Bed-ſteed, (if that do happily ſtande next your doore) at the heade whereof, you maie by a ſtrong imagination place an extreeme burning fire, and at the feete thereof a great and ſmoaking Dunghill. In your Chimney (if that likewiſe bee next your bed, and of a competent diſtaunce from the bedde) you maie imagine a Tubbe full of water. Then in your window beeing the next fitte place you may imagine Bellona ſtaring with her fierie eies, and portraied in all points according to the vſual deſcription of the Poets. Then vpon your court Cubbarde, you may place an Ape with her clogge, and in an other Window (if your Chamber haue two windowes) a Shippe vnder ſaile with all her tackle. Vpon your Chaire you may imagine a night-gowne furred with Foxe skinne, hauing wide ſleeues, and great pockets belonging to the ſame. Then vppon your Table ſtanding in the middeſt of the roome, you may place a Milſtone, or a Drumme, and in the top of the ſeeling ouer your Table, a Target, a ſword, or a Lute hanging downwarde. And if you want places, you may make either ſide of your windows to be one, and ſo of your Chimney: But heere you muſt haue an eſpeciall care beginning at the doore of your chamber to take the places round about the chamber according as they lie, and that before you fall to the practize of this arte you may perfitely (as your *Pater noſter*) remember euery place, and what ſubiect you haue placed therein, which you ſhall the better perfourme if you make a full and a liuelie deſcription of euerie ſubiecte in your minde before you place the ſame. Nowe hauing gotten all theſe ſubiectes, with their ſeuerall pla-

ces *memoriter & ad vnguem*, ſuppoſe you are to remember a Cat, a Lute, and a hande, you muſt alwayes remember to place your firſt worde whatſoeeuer it bee, and howe vnapt ſo euer it bee in the firſt ſubiect, and the ſeconde woorde in the ſeconde ſubiect, and ſo forwarde. And therefore you may imagine your Cat ſcratching the Souldier by the face, till the blood runne downe his cheekes, he himſelfe ſwearing and ſtaring and ſtrugling with her. Your Lute beeing layde in the fire, you may imagine the ſame burning to coles, and all the ſtrings cracking in ſunder to your great greefe. Then you may imagine for the better remembrance of your third word, a hande raking in the dunghill till it become foule and lothſome in ſight. In the like maner you may paſſe through the whole decade. And if you haue more words or *Capita rerum* to remember then ten, you muſt beginne with the next decade of your locall ſubiectes wherein you may place other tenne woordes, and ſo you may proceede to what number you liſt, hauing ſubiectes inough to receyue them. Beholde heere that great and ſwelling Arte, for the which Maiſter Dickſon did vſually take of euerie Scholler twentie ſhillings, making one whole Moneths diſcourſe of the Theorique part thereof, but in the practique hee coulde ſcarcely tell which way to beſtowe a full houre in demonſtration. And yet to deliuer my cenſure hereof, according as I haue found therein, I muſt of neceſſitie confeſſe, that although it doe neither anſwere his great promiſes, nor the expectation of thoſe his Schollers, whoſe good opinions he did entertaine ſo long with ſuch golden hopes in the bettering of their weake memories, that yet notwithſtanding the ſame is verie ſufficient

cient to procure an assured and speedie remembrãce of any 10. 20. 30. or 40. principall thinges more or lesse, that we shall take in charge to perfourme, and therfore verie necessarie for him that is charged with many errandes, and would discharge them all in such order as they are deliuered vnto him, as also for the remembrance of all such pleasant tales and histories as shall passe in table talke, from conceipted wits. In which two especial vses, I haue often exercised this Art for the better helpe of mine owne memorie, and the same as yet hath neuer failed mee. Although I haue heard of some of Maister *Dickson* his schollers, that haue proued such cunning Card-players heereby, that they coulde tell the whole course of all the Cardes, and what euery gamester had in his hande. So readie we are to turne an honest and commendable inuention into meere craft and cousenage. And if there be any that doe either make doubt of this art, or shal thinke that I haue dealt too compendiously in so large a Subiect, I will according to my ancient promise, be at al times readie, and that freely, aswell in this as in any other secret which I haue disclosed alreadie, or shal hereafter by any publique impression disclose vnto my Countrey men, be readie to manifest the same by plaine tearmes, or manuel demonstration, to their best contentment.

99. *How to make proiection, either vppon Mercurie, Venus, or any of the rest of the base bodies, with a medicine so exalted, as that one shal extend vpon a hundreth, either* ad album, or ad rubrum, *and abiding both the touch, malleation and coppell, the golde being 24. Carots high, and the siluer 12. ounces fine.*

A multis amatur Alchimia & tamen virgo est.

I Coulde neuer yet receiue any ſufficient warrant or allowance from the true and ancient chimical Philoſophers of al former ages, for the manifeſting of ſo great a ſecret as I haue now in hande, in any plaine or naked tearmes. And that made *Geber* to take holde of this Poſie, *Secretum tuum non reuelabis cuiquam.* And *Comes Treuiſanus*, dooth ſo religiouſlie holde and maintaine the ſecretting both of the Philoſophers matter, their fire, the Colours, time and proportion that is to be vſed in the great worke, as that he breaketh out into this ſtrong conuiration, of al ſuch happie Alchimiſtes as haue alreadie accompliſhed their golden deſires in this Art. *Quod ſi materiam, pondus, aut colores noueris, adiuro te per Deum viuum ne cuiquam reuelaueris.* But becauſe I purpoſe not to prophane or violate thoſe Sacred groundes of Nature in this diſcourſe, but onely to particularize a fewe proiections, *I* hope that both my pardon and my fault ſhal carrie one date, and therefore I will proceed the boldlier in my purpoſe. It is a worlde to ſee, how euerie Arte hath gotten his Counterfeite in theſe daies. Howe Logike is turned into Sophiſtrie, Rhetorique into flatterie, Aſtronomie into vaine and preſumptuous Aſtrologie, that ancient and diuine ſcience of Alchimie into Cementations, Blaunchers, and Citrinations, ending commonlie either in cooſenage, quoinage, or in *Capiſtro*, which made *Petrarke* to giue a Caueat in theſe wordes. *Caue Alchimiam, ſemper rebus aliquid defuerit, dolis nihil.* And againe. *Chimiſta qui tibi aurum ſuum ſpondet, cum tuo auro improuiſus aufugiet.* This made *Chawcer* in his time to play ſo pleſantlie

vpon

vpon the Alchimists hollow cole, & this hath made me to touch or glance at a few other sleights of later date, therby to admonish al yong gentlemen and others to take heed of al these mercenarie hirelinges, *Qui cum aliis mille aureos promittant, ipsi drachmam petunt. Locus poscit fabulam.* A subtile marchant sorting himself of late, with an old smokie Alchimist for his better credit, as they became fellow trauellers in the higher parte of Germanie togither lighting by chance vpon a young crewe of marchants that were wel monied, and ready for any rich prize that should be offred vnto them, especially for *Iasons* barke that was laden with the golden fleece, after some salutation had, and a few words of course enterchangeablie passing betwixt them, this cunning companion of the alchimists began to parlie with them in this maner. My maisters and friends, you seeme to be men of honest parentage and condition, and most happily to be here met both for your owne good and ours. So it is, that if you will performe that secresie which is requisite in so weightie a matter as I am in purpose to commende vnto you, *I* will make you the moste royall Marchantes of the whole Worlde. Neither shall any of you make the hazzarde or aduenture of one Deniere, vntill with your owne eyes and handes you shall haue seene and made a sensible proofe of this my friendlie offer. It is but in vaine to vse manie wordes amongst friendes. You shall make a perfect proiection your selues vpon Mercurie, *ad omne examen*; and because my selfe and my partener will bee free from all suspition of deceipt, you shall bringe the Crusible, the Coales, and also the Quicke-siluer with you, and wee will but onelie deliuer

deliuer you one graine of the medicine which ſhall extend it ſelfe vppon a full ounce of Mercurie, which you your ſelues ſhall likewiſe let fall into the cruſible. A man would thinke that this were plaine dealing; and that vnleſſe theſe men were wilfullie bent to coſen themſelues, that it were impoſsible, to deceiue ſo many young eies, that watched ſo carefully for them ſelues. But now to the practiſe. The fire being kindeled, one of them ſetteth on the Cruſible by direction of the Alchimiſt, vnder the noſe of a paire of goldſmithes bellowes, who told him that for the better fixation of the Mercurie, there muſte a reuerberatorie blaſt be made now and then with the bellowes, after the Mercurie was once warme in the melting pot. Now this Impoſtor had before conueied into the noſe of the bellowes, an ounce or ſomwhat more (to ſupplie that which the Mercurie with his fume ſhould carrie awaie with him) of Sol ſo ſubtiliated by often reiteration of *Aqua Regis* vpon it, as that it becam almoſt an impalpable powder, which when the Marchant by the appointment of the Chimiſt, had blowne amongſt the Mercurie, he was willed to drop in the medicine, being wrapped vppe in a ſmal paper, and then to leaue the cruſible in the fire, vntill the medicine and the Mercurie were both incorporated together, and that the Mercurie were ſufficientlie tincted into Sol, and within one halfe hour (after he had firſt cauſed them to melt downe an ounce of fine golde in an other cruſible, and to put the ſame to the firſt worke, for the better fuſion of the powder) he willed to be taken out of the fire and conueyed into an ingot, and the ſame being colde became twoe ounces of perfect Sol, abiding both the hammer, the teſt, and the horne of Antimonie. It is, not to bee

doub-

doubted, but that theſe yong gallants were right ioyful of this good ſucceſſe, deſiring nothing more then to become Lulliſtes, offering to exchange their freedome both of the olde Haunce and of the newe, for this multiplying Art. Now this geere worketh like wax, and the Alchimiſt demaundeth 2000. dollers, for the prouiſion of coles, furnaces, ſaltes and Minerals, but eſpeciallie to engroſe all the Mercurie, that could be gotten, leaſt either it ſhould riſe to an exceſſiue price, or be tranſported into Spaine, for the refining of the Indian oare. The money is foorthwith deliuered by weight, becauſe there muſt bee no time loſt in the telling, with a charge to vſe all expedition that could be for the gathering of the Mercurie together that was to be gotten far and neere. The ſubſtãce of this hiſtorie is already deliuered, I will not ſtande long vpon the circumſtance. The Alchimiſt hauing fingered the monie, beginneth to erect furnaces, and enterteineth them with a few diſtillations, calcinations and ſublimations, teaching them howe to make *Lutum Sapientiæ*, *Aquam ſeperationis*, *aquam regis*, *oleum vitrioli*, *ſalis*, *& ſulphuris*, to congeale Mercurie with the ſpirit of Saturne, to make *ſaccarum Saturni*, to whiten their teeth withall, to blanch copper with *Arſenick*, to melt one part of Luna with 3. parts of Venus together, and then to forge plate thereof, and by a certen ebulution, to make the ſame diuerſe times to touch equall with our beſt ſtarling, or higher according to the fineneſſe of the ſiluer that was mingled with Venus, all this (with an infinite number of ſpagiricall experiments) was performed, both to paſſe away the time without tedioufneſſe, whileſt the Philoſophers egge (which required 10. moneths digeſtion, was hatching in *Cælo philoſophorum*) as alſo

to gain ỹ more credit with the marchants, wherby a man of theſe ſingle gifts, might not be feared or miſtruſted of his flight, which both he & his companiõ were dailie practiſing, and in the ende finding good opportunitie they put the ſame in execution, leauing them that had moſt need to blow at the cole. I doo verelie beleeue that if the old D. of Florence were aliue againe, he would haue outbidden the marchants for this ſecret, whoſe diſtillatorie veſſels, furnaces, & other chimicall inſtrumentes, were all of ſiluer as I haue heard it often reported. But now to giue a few Items more againſt theſe Impoſtors, before *I* conclude, Let euery man that is beſotted in this Art, and dependeth whollie vpon other mens practiſes (himſelfe not beeing ſufficientlie acquainted with thoſe great and hidden Maximes of nature) take heed alſo of all falſe and double bottomes in Cruſibles, of all hollowe wandes or roddes of yron, wherewith ſome of theſe varlettes doe vſe to ſtirre the mettall and the medicine together, of all Amalgames or Powders, wherein any Golde or Siluer ſhall bee craftilie conueyed, of Sol or Luna, firſt rubified and then proiection made vpon it, as if it were vppon Venus hir ſelfe: but ſpeciallie of a falſe backe to the Chimney or furnace, hauing a looſe bricke or ſtone cloſely ioynted, that may bee taken awaie in an other Roome by a falſe Sinon that attendeth onely the Alchimiſtes hemme, or ſome other ſuch like watch-worde, who after the medicine and the Mercurie put together in the Cruſible, enterteineth *Balbinus* with a walk and with the volubilitie of his toung, vntil his confederate may haue leyſure enough to conuey ſome Gold or Siluer into the melting potte, which were able to deceiue the beſt ſighted Argus in the world.

By

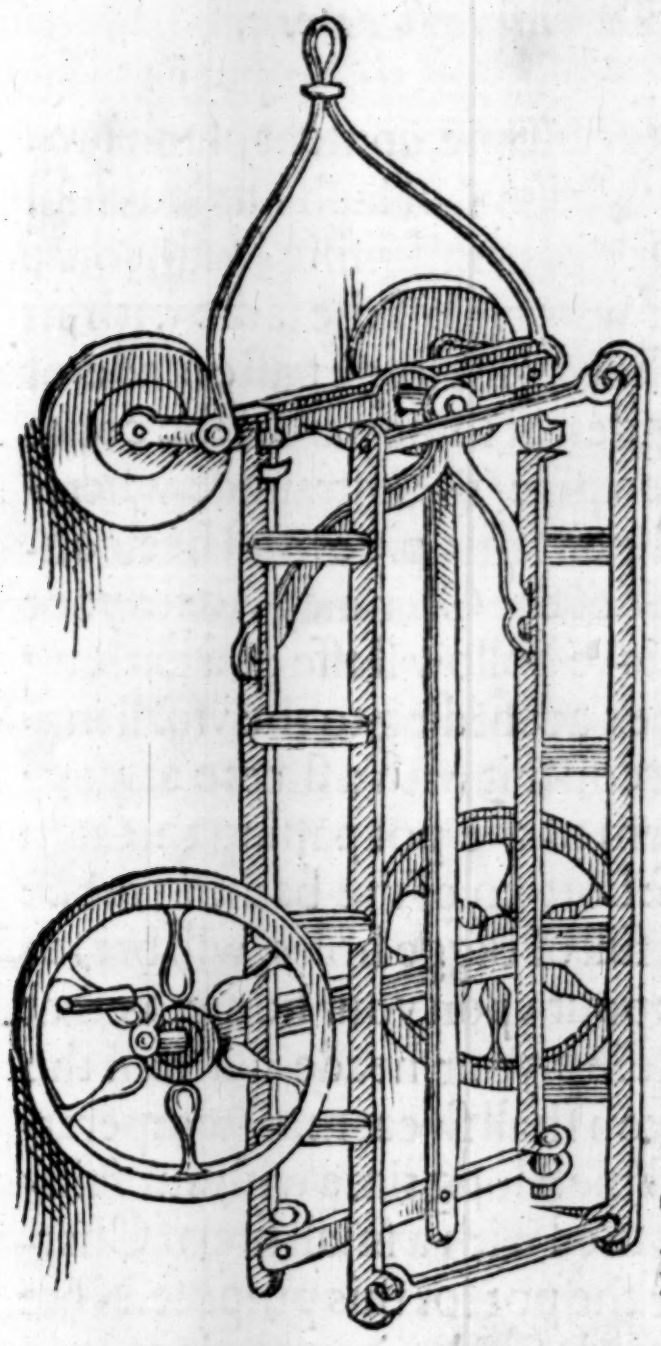
By theſe fewe legerdemaynes, I hope many thouſandes will be ſufficientlie warned, of theſe wandring & roguing Alchimiſts, who ſince the death of Cuckow, Stannie, and Feates, and the reſt of that rable, are become the verie Iuglers of the Lande, yea infinitelie woorſe than they: For that our auncient Iuglers would ſhewe all their iugling trickes for a groat or a Teaſtern, and though nowe and then they made ſhewe to tranſmute ſiluer into Counters, or money out of one mannes hande into an others, yet in the ende, euery man returned with the Coine which he brought in his purſſe againe, whereas theſe Raſcalles doe not onelie conuert other mennes monie wholelie into their owne purſes, but procure alſo a great loſſe and expence of time, which might haue beene many waies better, but no way worſe employed, and can neuer bee redeemed againe. Wherefore to conclude with *Petrarch*, *Dic vt ea ſibi præſtet quæ promittit aliis, primumque ſuam pellat inopiam. Eſt enim ferè mendicum genus hominum, cumque ſe pauperes fateantur, ditare alios volunt, quaſi aliena illis quam propria moleſtior ſit paupertas: ſic vt miſeri ſe alios miſereri dicere ſoleant impudenter, & ignotis etiam interdum magna promittere: O turpis promiſſio, & O ſtulta credulitas.*

100. *Howe to nippe or cloſe a Glaſſe with a paire of hot tongues, which is commonlie called* Sigillum Hermetis.

PLace a violl or other glaſſe hauing a long necke, in a pan of aſhes, ſuffering one inch of the neck only to peer aboue ỹ aſhes, then lay charcole round about the neck, & cloſe to ỹ ſame (ſom do alſo couer the viol

with a round glaſſe fitted to the mouth, both to keep out the aſhes and alſo the extreame heate of the fire from ſtriking downward into the belly of the glaſſe, couering alſo the verie toppe or ſumitie of the glaſſe with charcole, two or three inches aboue the ſame, then make fire at the toppe and let it kindle of it ſelfe downeward, and if that heat be not ſufficient, vſe alſo the blaſt of the bellowes, for you muſt force the neck of the glaſſe euen to a heat of fuſion, and when it is readie to melt, then nip the ſame cloſe together with a paire of tongs beeing red hot, which for the ſame purpoſe muſt be kept in a ſtrong glowing fire, and if you can take it in his iuſt time, you ſhal cloſe the ſam ſo ſtronglie, that it is impoſsible for any ayre to iſſue out. You may ſafelie keepe any diſtilled oile or water in a glaſſe ſo nipped. But take heed how you keepe the iuyce of any ſtrong or fierie plant, as alſo of any decoction that is apt to worke it ſelfe into a bodie, as new muſt, or the ſtrong worte either of ale or beere, leaſt you doe not onelie miſpend your time, loſe your liquor, and breake your glaſſe, but alſo get a ſhrewde turne your ſelfe, if you happen to be within gun-ſhot. For there be certein wilde ſpirits within, who can indure no impriſonment, but if they can find no waie, they will make waie, bearing out before them both locke, bolt, and hinges, and yet they are ſuch as the Philoſopher can not want, though the vulgar ſorte know no vſe of them.

101 *A Wagon to bee drawne with men in ſteade of horſes.*



THe ioynts and other parts of this wagon are ſo knit togither with hookes & pinnes, as that it may eaſily bee diſioynted and taken in ſunder, whereby many of thē may be couched in a narrow roome, and will lie cloſe togither in a ſhip. It is to bee drawne with ſix men, whereof two of them muſte labour at the fore-cariage thereof, and at either wheele other two, which muſt woorke by winding of the handles, (which are of purpoſe faſtened both to the Naue of the wheele, and axletree) either forward or backward as occaſion ſerueth. The vſe therof is to conuey their vittails and other neceſſaries from place to place when the mariners or ſouldiers haue cauſe to land in ſome coūtries where the place affoordeth no horſe or other beaſtes that are fit for labour or cariage. I know not the Authour of this inuention, but becauſe it came ſo happilie to my handes, and carieth ſome good conceipt

with it, I thinke it neceſſarie to be publiſhed amongſt other ſeruiceable deuiſes for the ſea.

102 A delicate ſtoue to ſweate in.

PVt into a Braſſe potte of ſome content, ſuch proportion of ſweete hearbs, and of ſuch kinde as ſhal bee moſt appropriate for your infirmitie, with ſome reaſonable quantitie of water, cloſe the ſame with an apt couer, and well luted with ſome paſte made of flowre and whites of egges, at ſome part of the couer you muſt let in a Leaden pipe (the entraunce whereof muſt alſo bee well luted) this pipe muſt bee conueyed (through the ſide of the Chimney where your pot ſtandeth) in at a thicke hollow ſtaffe of a bathing tub croſſed with hoopes according to the vſuall maner, whereby you may couer it with a ſheete at your pleaſure. Nowe the ſtem of the pot paſſing through the pipe vnder the falſe bottom of the bathing tubbe which muſt bee bored full of bigge holes, will breath ſo ſweet & warme a vapour vpon your bodie, as that (receyuing aire by holding your heade without the tub as you ſit therein) you ſhall ſweat moſt temperatly, and continue the ſame a long time without fainting. And this is performed with a ſmall fire of Charcole maintained vnder the pot for this purpoſe. Note that the room would be cloſe wherin you place your bathing tub, leaſt any ſudden cold ſhould offend you whileſt your body is made open & porous to the ayr.

103 The Arte of refining of Sugar.

MAke a verie ſtrong Lee of vnſleckt Lime wherein diſſolue as much courſe Sugar as the Lee will beare,

beare, then boyle the ſame a little, and preſently put in the whites of egges firſt beaten into Oyle, which will make it to giue vp a ſcumme, which muſt bee taken away as long as anie ryſeth. Then poure all the liquors through a great woollen cloth bagge, and ſo the filth will remaine behinde in the bagge, then boyle the liquor againe, till it bee ripe, which you ſhall knowe by taking two or three droppes of the liquor and putting that vppon a plate of colde yron, letting it coole, which when it is congealed a little like ſalt, or as a meane betweene ſirruppe and hard Sugar, then take the lyquour from the fire, and poure out the ſame into the earthen Potte or Moldes made for the ſame purpoſe, hauing a hole in the ſmaller ende which muſte bee ſtopped for one night after, and after that night open it, letting all the ſubſtance remaine in the Potte, vntill the ſyrruppe beginne to leane dropping (into the nether Potte wherein Moldes ſtande) or droppe verie ſloulie at the little hole, this Syrruppe (as I take it) is that which they call *Malaſſoes*,) Then take Potters Claie, and Clay the broade endes of the Potte ouer therewith, and as that Claye ſinketh downe by reaſon of the ſhrinking of the Sugar, fill them vp with more Clay, repeating the dooing thereof till the Sugar ſhrinke no more. Then take the Sugar-loaues out of the Moldes, and put them in a Stoue, till they bee drie and harde, and after binde them vppe in Papers according to Arte. Note that if the Sugar after the firſt boyling, and beeing powred out into the Moldes and beginning to congeale, appeare to bee ouerblack or foule, and ſhall not become white at the firſt in the ſame Moldes, but ſome ſpeciall part remaine therein,

therein,then it muſt be newe boyled with Lee in all pointes *vt ſupra*, till it bee perfectly white. Alſo the clay muſt be potters clay,tempered like pappe in water,and the ſame muſt runne through a Colander ful of holes vppon the bottome of the Suger loafe, for the ſoftneſſe of the Sugar will not ſuffer the preſſing downe of any ſtiffe clay. This receipt though happily it want ſome of the circumſtances in the Arte of refining, yet it ſhoulde ſeeme the matter of ſubſtaunce is ſufficiently vnfolded herein. I had the ſame of a Gentleman of good Worſhip and a great artiſt.

FINIS.

Diuerſe new ſorts of *Soyle not yet brought* into any publique vſe, for *manuring both of paſture* and arable ground, with ſundrie concepted practiſes *belonging therunto.*

Faithfully and familiarly ſet *downe by H. Plat of Lin-*colns Inne Gent.

LONDON
Printed by Peter Short.

1594.

A Philoſophicall diſcourſe as well *vpon the Common, as vpon the ve-* getatiue and fructifying Salt of Nature.

HAuing found by ſundrie obſeruations, drawn from experience her ſelfe the vndoubted mother of all true and certaine knowledge, that all ſorts, and kindes of Marle, or ſoyle whatſoeuer, either knowne or vſed alreadie for the manuring, or bettering of all hungry and barren grounds, or as yet concealed, and kept in the boſome of Nature, from the common and vulgar ſort of people: do draw their generatiue and fructifying vertue from that vegetable ſalt (which M. *Bernhard Paliſſy* in his learned and philoſophicall treatiſe, *de la nature des eaux, & fonteines*, dooth ſo often tearme by the name of a fift element, whereon all our auncient Philoſophers did ſcarcely dreame) I haue thought good, becauſe *I* would not ſeeme fantaſticall, and ouerweening in mine owne conceite, as if I were the firſt broacher of this opinion: before I proceede to anie practicall diſcoueries herein, firſt to ſet downe that ſhort & ſweet diſcourſe of *Franciſcus Valetius* in his booke *de ſacra Philoſophia, cap. 34.* vpon the miracle contained in the fourth booke of the kings and ſecond Chapter, and then to amplifie the ſame by ſome of thoſe manifeſt experiments which are common in this land alreadie, and by ſome others of more value, and yet of leſſe charge, although as yet not knowne, or at the leaſt not publiſhed by any former Authour.

In the fourth Booke of Kinges, and ſecond chapter. 19, 20, 21, and 22. verſe, it is thus written. And the men of the Citie (that is of Hierico) ſaide vnto Eliſha, Beholde ſir, the dwelling of this Citie is pleaſaunt as thou thy ſelfe ſeeſt: but the Water is naught, and the grounde barren. Hee ſaide, bring mee a newe Cruſe, and put ſalt therein. And they brought it him. And hee went vnto the Spring of Waters, and caſt the ſalt therein, and ſayde, thus ſayeth the Lorde, I haue healed theſe waters: there ſhall not come hence foorth either death, or barrenneſſe. So the Waters were healed vnto this day according to the ſaying of Eliſha which he ſpake.

Wherevpon Valetius entreateth in this maner. There is no doubt but that this, as alſo diuerſe other ſignes, and tokens were ſhewed vnto the people of Iſrael by way of figure, as Saint Paule dooth teſtifie, and that the ſame dooth ſignifie ſome other purifying, and cleanſing of waters, and that it was done in token of ſome Sacrament. But whether there bee anie regarde to bee had of Nature in this myracle or no, wee are at this preſent to conſider, and examine. For I haue oftentimes obſerued euen in the perfourming of myracles, that for the moſt part, it pleaſeth God to vſe ſome naturall cauſe, and that vppon manie, and excellent reaſons him moouing thereunto. Wherefore ſeeing the barrenneſſe of the earth is cured by the Waters, it is manifeſt that there is nothing elſe meant in this place, but that the Waters were of ſuch kinde, and qualitie, as that the earth beeing watered therewith, became barren by their corruption. And it ſeemeth by al probabilitie that this fault was in their ſaltneſſe, both

becauſe it is an ordinarie accident to many waters, whereby they are made vnholſome to be drunk, and becauſe that, of all other thinges dooeth moſt of all make the earth vnfruitful; wherevpon it grew into a cuſtome with our auncient forefathers, that all ſuch ground as became forfeit and confiſcate vnto the Crowne, by reaſon of any high and capitall offence committed, ſhould be ploughed and ſowed with ſalt, which we read to haue beene doone by *Abimelech*, in the ninth Chapter of the booke of Iudges, when he had deſtroyed the cittie of the Sichemites, and in the Pſalme it is ſaid: He hath deſtroyed a fruitful land with ſaltneſſe, for the wickedneſſe of the inhabitants. And therfore ſaltneſſe is a principall meanes to make the ground vnfruitfull, and the ſowing of ſalt thereon bringeth forth barrenneſſe, and a curſe vpon it. But how then commeth it to paſſe, that if the waters of Iericho, did hereby both become vnſauorie for the people to drinke, and vnprofitable for the encreaſe of the earth: that there ſhould be any naturall vertue in ſalt, to helpe and ſweeten them, eſpeciallie when S. Iames ſaith in his Epiſtle and third chapter. My brethren, can the fig tree bring forth grapes, or the vine bring forth figs? So neither by the ſame reaſon, can ſalt make waters to be freſh & ſweet. Neither can it bee denied, but that as contraries are remedied by their contraries: ſo likewiſe that the faults of al things are increaſed by their like and ſemblable Natures. Therefore one of theſe two muſt of neceſsity fal out, that either in the myracle of *Eliſha*, there was no regard had of nature at al, but that there was a meere contrarie courſe to nature vſed, thereby to make the myracle the greater (for we read of ỹ like often in the holie Scriptures) or elſe that the fault of theſe waters

was not in their ſaltneſſe, but rather in ſome other rotten and putrified corruption, which as in all other things; ſo in water moſt eſpecially is corrected by the addition, and mixture of ſalt. For ſalt beeing of an hot and drie nature, and by ſolution being verie apt to incorporate therewith, conſumeth all the putrified vapors, or partes thereof, and correcteth all the putrifaction which it findeth, and it maketh all good Waters to keepe ſweet and ſounde the longer. For the Marriners themſelues can witneſſe, that ſuch waters as be ſomwhat brackiſh, be the beſt for long voiages, becauſe they will laſt longer than others: and therfore they do often water their ſhips from ſprings that bee neere the ſea. And furthermore thoſe that doe ſearch more narrowlie into the nature and property of all things, doe conſtantlie affirme, that ſuch ſpringes as be offenſiue in ſmel, or that carry any bad or corrupt taſt with them, are no waie better to bee purified & clenſed, then by caſting of ſalt into them. Therefore this ſeemeth verie probable for that (beſides all which *I* haue alreadie alledged) waters doo become moſt deadlie and contagious, by their putrified and offenſiue ſmels, rather than by their ſaltnes. Yea the ſaltneſſe of the waters (vnleſſe it be extream, as in the Sea of Sodome, which for that it engendreth no liue thing, and alſo deſtroyeth whatſoeuer falleth into it, it is called by the name of the dead ſea) doth neither tend to deſtruction, neither is it offenſiue to the fertilitie of the ground (but rather beeing meanely brackiſh, and thereby alſo it ſelfe not ſubiect to putrifaction, as wee may behold in the ſea) it maketh the waters themſelues moſt fruitfull. Neither is there any place in the whole world where that generatiue vertue doth more abound, or where there is more

more infinit generation & multiplicatiō of creatures, then in the wide Ocean. And I doo verely beleeue ỳ the ſpirit of God which in the beginning did ſpread it ſelfe vpon the waters (which I doe hold to be a certen fire) did make them to be of that nature, that is to ſay, thicke and ſalt, and by that reaſon they are much more apt for the generation of all creatures, then any freſh waters whatſoeuer. Now then euery kind of ſaltwater is not hurtful to plants, neither is it hurtfull to al alike, but there be certen plantes which proſper beſt in ſaltwaters, & thoſe ſprings, which be ſomwhat brackiſh are rather vnfit to make drinke for mans body, then to water the grounds. For nothing is more vnſauory in our drink then ſalt, becauſe that our thirſt doth naturallie deſire to bee ſatisfied with that which is cold and moiſt, wheras theſe watering dewes doe rather repreſent a food, then a bare drinke to ỳ earth, for they giue a kind of noriſhment vnto plantes, neither do they offēd vnles they be ouerſalted like brine. So that according to the meaſure of ſaltneſſe, theſe brackiſh waters be either good or hurtful to al kind of vegetables: for if they ſauour of the exceſſe then they burn, and dry vp the ground, and ſo make it barren, but if they bee moderatelie ſalt they agree well with diuers plantes, and bee not verie hurtfull vnto any.

So likewiſe all other liuing Creatures by the extreamitie of ſaltneſſe are deſtroyed vtterlie, as wee ſee by the Redde Sea, for they are euen parteched awaie therewith, but if that the ſame bee more temperate (as in all other Seas) many Creatures are ingendered thereby, and doe growe into huge and mightie bodies, and bee more ſounde then any other Creatures, and many of them beeing dead,

may

may bee kept a long time, although I am not ignoraunt, that ſome kindes of fiſhes cannot endure the leaſt ſaltneſſe that may be, neither can they continue, or liue but in the freſh water onely, and ſome others againe doo thriue and proſper in either of them: ſuch is the great varietie of natures. But vnto man, and to diuers other land Creatures, the eating of much ſalt is very contagious, becauſe it maketh the bloud ſalt, and it breedes barenneſſe to mans bodie by the extreame ſiccitie thereof, and it maketh our ſeed or nature too ſharpe, but the ſame being moderatly taken, is very ſtirring in our bodies, and prouoketh them to venerious actes, whereby it helpeth to the generation of mankind.

And therefore me thinks, that al thoſe controuerſies about the ſeueral natures of ſalt, are but friuolous wherein ſome doo contend that it engendereth barrenneſſe, and death, and therefore it was vſed to bee throwne vpon curſſed groundes, and others woulde haue the ſame to be of a fruitful and incorrupt nature, which made the Poets to faine, that Venus was born in the ſea, by meanes of the ſperme of the Gods that fel into it, and ſo they called hir ἀφροδίτην of the fome or froath of the ſea. And here by the waie I wil make bold alſo, to inſert the opinion of that learned, and great Magitian *Io. Bap. Por. 347.* who writing vpon the helpes of conception ſaith, that ſalt doth greatlie further procreation, for it doth not onely ſtir vp luſt, but it doth alſo miniſter fruitfulneſſe. And therefore the Egyptians did vſe to feed their bitches with ſalte meates, when they found them vnapt for generation. And Plutarch doth witneſſe, that ſhips vpon the ſeas are peſtred and poiſoned oftetimes, with exceeding ſtore of mice. And ſome hold opinion, that the females

females without any copulation with the males, doe conceiue onely by licking of ſalt. And this maketh the Fiſhmongers Wiues ſo wanton, and ſo beautifull. Which cauſed the Egyptian prieſts (by the report of Plutarch) moſt religiouſlie to abſtaine from ſalt, and ſalt meates, for that they found them verie ſtirring, and prouoking to venerie. Wherefore ſince the nature of ſalt is to defend and take away all putrifaction, which leadeth euery thing vnto deſtruction, it ſeemeth vpon good reaſon that this was the ſalt of the waters of Iericho, and that *Eliſha* did hold a naturall courſe in correcting of them: God himſelfe exalting aboue nature that naturall propertie which hee had firſt giuen vnto ſalt: For otherwiſe, neyther ſo ſmall a proportion of ſalt, woulde haue ſufficed to haue purified ſo great a quantitie of Waters, neither could theſe waters haue laſted ſweet vntill this daie. Thus farre *Valetius*.

Nowe that we may yet haue a farther, and more inward ſpeculation into the nature of ſalt, it ſhall not be impertinent to our purpoſe, to ſet downe and gather, all thoſe obſeruations, which I haue alſo culled and gathered out of twoe larger Treatiſes, the ſame being euen wrung out of the bowels of the earth, by that learned husbandman, maiſter *Bernard Paliſsy*, whereof the one is entituled, *Des ſels diuerſes*, and the other *De la marne*, wherby all thoſe that be ỹ true infantes of Art, may receiue a full light into nature, which dooth heere preſent hir ſelfe in all hir royaltie, with her *Cornucopia* in her hande, and the ignoraunt Farmers may alſo gleane with them, a fewe loſe and ſcattered eares, to make ſo much breade of, as may relieue their hungrie bellyes. And hauing performed this collection, I will ſette downe ſuch particu-

ler practiſes, as haue their full warrant from theſe two Theorickes, and may ſerue in diuers partes of this land, either for arable or paſture groundes, where the ordinarie ſoile or dung doth faile vs.

A philoſophicall diſcours vpon ſalt.

There are ſo manie ſortes and kindes of ſalt (ſaieth Maiſter *Bernard*) that it is impoſsible for any man to number them all, and farther I tell thee that there is not any one thinge in the worlde, which dooeth not participate of this ſalt, whether it be man, beaſt, tree, plant, or any other kinde of vegetable, yea euen the mettals themſelues, and that which is more, there is not any kind of vegetable whatſoeuer, that coulde growe or flouriſhe, without the action of ſalt, which lieth hidde in euerie ſeede, and beſides all this, if the ſalt were deuided from the bodie of any liuing man, or from the ſtones which are wrought vppe into ſtrong buildinges, or from the principall poſtes, the Rafters, and the beames of any houſe, they woulde all fall to powder, in leſſe than the twinkeling of an eie. The like may bee ſaid, both of yron, ſteele, gold and ſiluer, and all other mettals. And therefore hee that woulde knowe of mee howe many kindes of ſalte there bee, I ſhall bee forced to anſwer him that there be as many, as there be ſeuerall ſortes of taſtes, or ſents.

Diuerſitie of ſalts.

Coppres is a ſalt, Niter is a ſalt, vitrial is a ſalt, allom is a ſalt, Borras is a ſalt, Suger is a ſalt, Sublimate is a ſalt, Saltpeter is a ſalt, the ſalt gem, *Le Salicor*, the Tartar, ſal Armoniacke, all theſe are diuers kindes of ſaltes, and if I would take vppon me to name them all, I ſhoulde neuer make an ende. The ſalt which the Alcumiſtes call *Sal Alcali*, is extracted from an herbe, which groweth in the ſalt mariſhes of the Iſles

Iſles of *Xantoigne*. The ſalt of Tartar, is nothing els, then that ſalt of the reaſons which giueth the taſte and ſauour to the Wine, and defendeth it from putrifaction, and therefore I ſay yet againe, that the ſauour of all things proceedeth from ſalt: which alone cauſeth the vegetation, perfection, maturitie, and the whole good that is conteined in euery thing that nouriſheth.

And although there bee diuers ſortes of theſe and other vegetables, whoſe ſaltes be more fixed and of harder ſolution, than the ſalt of the Vine, & *du ſalicor*, neuertheleſſe I ſay, that in all manner of Trees, and plantes, there is more or leſſe of this ſalt, *videlicet*, ſo much as is ſufficient for them: aſwell as in thoſe others before mentioned, for otherwiſe manie kindes of Aſhes woulde not ſerue to whiten linnen cloathes: by the effect of which aſhes thou mayeſt eaſilie vnderſtand that there is ſalt in all thinges. And thou art not to thinke, that the aſhes bee of ſtrength to whiten, but onelie by the vertue of their ſalt, for otherwiſe the ſelfe-ſame aſhes might ſerue diuerſe times.

The properties of ſalt.

Salt the ſtrength of aſhes.

But in ſo much as the ſalt which is within the ſaide aſhes, commeth to bee diſſolued in the water, wherin they boile, it penetrateth the linnen, and by his vertue ſharpeneſſe, and biting, all the filthe and ſoile of Cloth is diſpearſed, mollified, and carryed downewarde with the Water, which afterwardes becommeth a Lee, becauſe that therein reſteth and remayneth all ſuch ſalt as was in the aſhes before, beeing now diſſolued by the action of the water, and the aſhes by this meanes hauing loſt their ſaltneſſe, haue not any more ſtrength to whighten anye

other linnen, and men caſt them out into the ſtreetes as altogither vnprofitable. Marke yet one other example. When the ſalt-peter-men ſeeke to drawe out the ſalt peter from the earth, they worke in the ſame manner as is before ſet downe for the making of the Lee, and when they haue gotten out the ſalt peter, both the aſhes and the earth, out of which they haue now taken the ſalt, are altogither vnprofitable: for that there is no more ſalt lefte which was the principall worker.

And yet for thy better inſtruction, conſider thoſe men which tan the hides of beaſts, they take ẏ barkes of Oake, and hauing dried and broken them, they lay them amongeſt the hides in their tanning fats: and when the hides haue remained their full time with thoſe barkes, they caſt them awaie as a thinge of no further vſe (although I knowe that in diuers places where fewell is deere, they vſe to make cloddes, or turfs of them, in the likeneſſe and forme of cheeſes, which they cauſe to be dried, and ſo burne them for want of other fiering) but the aſhes of them are nothing woorth, becauſe the ſalt of them is already ſpent.

Dooeſt thou not vnderſtand heereby, that it is not the barke, that hath hardned and tanned the leather, but the ſalt which is conteined therein? For otherwiſe the ſame barkes woulde ſerue againe, but becauſe the ſalt is diſſolued it is ſoaked into the Leather, by reaſonne of his moyſture, which hath made an attraction thereof to ſerue his own turne. It is alſo to bee noted that in al kinde of woodes, the ſalt is in a manner wholelie in the barkes, and that ſuch wood as is barked dooeth neuer yeelde any ſtrong aſhes. Mounſieur Siſly Duke Mountpenſier

ſier his Phiſition ſhewed vnto mee vppon a certaine time a ſticke of Sinamon, which was about foure foote in length, and an inch thicke. I taſted of the vttermoſt barke thereof, and it had the liuely, and naturall ſauour of the beſt and ſtrongeſt Cinamon, whereas in al the reſt of the ſticke, there was no more taſte then in a ſtone. And this is the reaſon why the Tanners account of nothing elſe but the barkes, becauſe of the ſalt which is in them, for otherwiſe the reſt of the wood being wrought into powder, might ſerue their turne as well. And for further proofe that there is ſome ſalt in euerie thing, we read that the Egyptians were woont to vſe Niter, and other Aromaticall bodies, about the dead bodies of their kings, and princes, which wee doe call enbawming: which Niter is a preſeruing ſalt, that defendeth from putrifaction. And their fleſh ſo embaulmed is called *Mumia*, which the Egyptians doe finde to bee verie medicinable, and for my part I thinke the ſame more wholſome then potable golde. There be ſome in our time that woulde faine imitate that ancient manner of enbaulming, and ſeeke to make a kinde of *Mumia* of their bodies who haue ſuffered death for ſome capitall offence, but they faile herein, and their *Mumia* doth ſoone corrupt, and putrifie, for want of ſuch excellent Aromaticall drugges as thoſe ancient Egyptians vſed. For now it is generally holden, that all thoſe ſweet ſmelling ſimples, all the Rubarbe, Gums, and other Aromaticall ware, are greatly ſophiſticated before they come to our handes, and our common ſalt is not of that vertue to preſerue things withall, as thoſe aromaticall drugges which come from the bleſſed Arabia, and other hote Countryes. And that euerie thing hath ſome ſalt in it, it is mani-

Glaſſe of all kinds of aſhes

feſt, for that it is poſſible to make Glaſſe of all kinds of Aſhes, although ſome ſortes of them bee of harder fuſion or melting than others. And were there not ſome ſalt in all trees and hearbes, it woulde bee a thing moſt impoſſible to make Glaſſe of them. The ſecrete vertues alſo which lie hid in ſalt confirme the ſame. For ſalt whiteneth all thinges, it hardeneth all things, it preſerueth all things, it giueth ſauour to all things, it is that Maſticke that gleweth all things together, it gathereth and knitteth all mine all matters, and of manie thouſand peeces it maketh one maſſe. This ſalt giueth ſounde to all thinges, and without the ſounde no mettall will ring in his ſhirle voyce. Salt maketh men merrie, it whiteneth the fleſh, and it giueth beautie to all reaſonable creatures, it entertayneth that loue and amitie which is betwixt the Male and Female, through that great vigour and ſtirring vppe which it prouoketh in the engendring members, it helpeth to procreation, it giueth vnto creatures their voyce, as alſo vnto Mettalles. Salt is the cauſe that manie ſmall pibble-ſtones beeing ſubtlelie powdred, become one maſſe, whereof they make our drinking Glaſſes, and all other ſortes of Table-veſſell, and by the power of ſalt, all ſubſtaunces maie bee brought into tranſparent bodyes. And it is ſalt that maketh all ſeedes to flouriſh, and growe, and although the number of thoſe men is verie ſmall, which can giue anie true reaſon whie dungue ſhoulde doe anie good in arable groundes, but are ledde thereto more by cuſtome than anie Philoſophicall reaſon, neuertheleſſe it is apparaunt, that no dungue, which is layde vppon barraine groundes, coulde anie way enrich the ſame, if it were not for the ſalt which the ſtrawe

The vertue of Salt.

and

and hay left behinde them by their putrifaction. And therfore al theſe ſimple ſots which leaue their muck-heaps abroad, and ſubiect to the weather, ſhew themſelues to bee but meane husband men, and that they neuer taſted of any true naturall philoſophie. For the raine which falleth vpon theſe dungue-hils, flowing downewarde into the vallyes, dooth alſo carrie with it the ſalt of the dungue which diſſolueth it ſelfe with the moyſture: whereby the ſoyle beeing afterwarde laide abroad vpon the land, dooth little or no good vnto it. But if thou wilt not giue credite vnto my ſpeech, yet marke howe the labouring Hinde, when hee carryeth his dungue to the feelde, howe in diſcharging of his loades hee leaueth it in certane heapes together, and a while after hee commeth to ſpread it all ouer the ground, and layeth the ſame in equall leuill, and afterward when the ſame feeld happeneth to bee ſowed with corne, thou ſhalt alwayes finde the corne to be more greene and ranke in thoſe places where the ſame heapes were firſt layde (after they haue lien there ſome reaſonable time) then in anie other place in all the ground beſides, and this commeth to paſſe by reaſon that the raine which fell vppon them, hath caried euen the ſalt through them, and conueied it into the earth that was vnder them. Wherby thou maiſt eaſily gather that it is not the dung it ſelfe which cauſeth fruitfulnes: but the ſalt which the ſeed hath ſucked out of the ground. And herevpon it commeth to paſſe that all excrements as wel of man as beaſt, ſerue to fatten & inrich the earth. But if any man will plow, and ſow his ground yearely without dunging the ſame, the hungry ſeede in time will drinke vp all the ſalt of the earth, whereby the earth being robd of her ſalt, can bring forth no more fruit,

muckheaps ought to be couered.

All excrements enrich ground

fruit, vntill it bee dunged againe, or ſuffered to lie fallow a certaine time: to the ende that it may gather a newe ſaltneſſe from the cloudes, and raine that falleth vpon it. But I ſpeake not here of common ſalt, but of the vegetatiue ſalt. For there bee many that hold opinion, that there is no greater enemie to all ſeeds then ſalt, and that becauſe in ancient time when any wicked, or deſperate villain had committed any notorious crime that deſerued death, hee had ſentence giuen him to haue his houſe raced, his ground turned vp, and ſowed with ſalt, that it might neuer after bring forth fruit againe. I know not whether there bee any Countrie whoſe ſalt dooth not agree with corne: but I am ſure that vpon the little hillockes in the ſalt Marſhes of *Xantoigne*, men doe mow as good graſſe as in anie other place that euer I came in. *And* thoſe hillockes doe come of the groundes and waſhinges throwne vp from the bottome of the ſame Marſhes, which are as brackiſh as the ſea water, and yet neuertheleſſe I did neuer ſee any fayrer corne in my life then groweth in them. *And* therefore I know not why our Iudges haue taken occaſion to ſowe ſalt on the offenders groundes, to bring a curſe vppon them, vnleſſe there happen to bee ſome ſuch Countrie where ſalt is the meere enemie of all ſeedes. But to continue our firſt courſe, and to proue that ſalt is no enemie, either to the vegetatiue, or ſenſatiue natures. We ſee that the Vines of the countrie of *Xantoigne* which are planted in the midſt of the ſalt marſhes, doe bring forth a kinde of blacke reaſon, which they call *Chanchets*, and wherof there is a wine made that is nothing inferiour to our Hipocras, in which they vſe alſo to dippe their toaſted bread, as they doe in Ypocras. And theſe Vines are ſo fertile that one

plant

plant of them dooth bring foorth more fruite, then ſixe of thoſe that growe in Paris. See nowe what reaſon I haue to thinke that ſalt is ſo farre off from beeing an enemie to Nature, that on the other ſide it doth rather helpe the goodneſſe, ſweetneſſe, maturitie, generation, and preſeruation of the ſaid Vines. And not onely ſalt dooth giue his ayde, and helpe herein, but alſo the ayre it ſelfe, by his ſalt exhalations. In the aforeſayde Iſlandes, and within the ſalt Marſhes, there is a ſalt hearbe founde called *Salicor*, whereof the moſt beautifull Glaſſe of all other is made, and there is alſo gathered that *Xantonique* Wormewood, ſo called of the Countrey where it groweth. The ſame hearb hath this propertie, that if one doe boyle the ſame, and with the decoction thereof doe temper a little meale, and make it into paſte, and ſo frie the ſame either in larde or Butter, and eate thereof, it will expell, and driue out all ſuch Wormes, as are either within the bodies of men, or children. And before I vnderſtood thereof, I had ſix children that died of the Wormes which I did manifeſtly perceiue as well in the anatomizing of their bodies, as alſo for that oftentimes they voyded them at their mouthes, and when they were drawing to their ende, theſe Wormes woulde iſſue at their noſthrils. My purpoſe is not hereby to proue that common ſalt doth agree with all kinde of plants, but I am well aſſured that the ſalt Marſhes of *Xantoigne*, doe bring foorth all maner of fruites that are planted there, and the ſame ſo pleaſaunt, as in no place more where I haue trauayled.

All wilde hearbes, thornes, and thiſtles, doe proſper ſo exceedingly there, as no where better, which is a ſufficient confutation to thoſe which would haue

ſalt to be enemie to all plants. For if it were an enemie to plants, it ſhould alſo bee an enemie to the nature of man, which the Burgonions will by no meanes confeſſe, for if they were ſo perſwaded, they woulde neuer haue ordained that ſalt ſhoulde bee put in the mouthes of their infants at their baptiſme, whereupon they are tearmed the powdred Burgonions. Neither will the beaſtes agree that ſalt is an enemie vnto them, for the Goates will deuoure as much thereof, as you will giue them, and they ſeeke out purpoſely for briniſh walles, againſt the which men haue made water, euen to licke them. And the Pigeons when they happen to find an olde wall whoſe temper was made of Lime and Sand, and beginneth once to molder away, they will neuer leaue it, nor bee driuen from it.

Now ſome ſimple Clowne that neuer knew what learning ment, will perhaps imagine, that they feede vpon the ſande, but that is but a blind conceipt, for it is not digeſtible, whereas this is the verie potable Golde of the Pigeons, and therefore wee are not to thinke that they ſeeke for ought elſe then the Lime that is in the morter, and that for the ſaltneſſe thereof. And if they happen to ſwallow one graine of ſand, it is againſt their willes.

The Oiſters for the moſt part are alſo nouriſhed by ſalt, and their ſhels are compounded of it which they themſelues haue wrought vp, and it is very apparant that it is ſo, for that their ſhels being caſt into the fire, do make a crackling much like to common ſalt. And if ſalt bee of that vertue as to woorke an erection of thoſe engendring parts (as I haue ſaid before) it is a thing moſt certaine and well approoued, that Oiſters themſelues are of the ſame operation: which approueth

ueth my former allegation, that thoſe Oyſters are for the moſt part nouriſhed with ſalt. But for a further confirmation, that ſalt is not enemie to anie vegetatiue nature, let vs a little beholde the worke of the plaine countrimen of *Ardenna*, in diuers places whereof they cut down woods in great quantitie, and thoſe they couch & range in the earth in ſuch ſort, as that there may be drawne vnto them ſome aire from belowe, then they lay great number of cloddes of earth vpon the ſame wood, yet ſuch as are full of ſwarth, and graſſe, and afterwardes they kindle the Wood which lyeth thus couered with the turfe, and after they haue burned them all togither ſufficiently, they diſperſe them ouer the face of the whole ground, as wee vſe to doe in our dongue, then they plough it, and ſowe Rie there, where nothing elſe but Wood grew before, and the Rie commeth vp aboundantly, and this they do euerie ſixteene yeares. And in ſome partes but ſixe yeres, and in ſome parts but four yeres onely, wherby the ground being ſpared ſo long, bringeth foorth afreſh as much wood, and as great as at the firſt. And of this wood they fell ſo much as is ſufficient to enrich the ground for one yeares crop, and burne the ſame with their turfes together as before: and ſo conſequently euery yeere vntill the number of ſixteen yeeres be expired, and then they begin again at the firſt peece of ground which they had ploughed 16 yeeres before, in the which they find the wood of as great a growth as in the beginning. Hereby it is manifeſt, that the ruſticall opinion of thoſe clowniſh people of that Countrey is vtterly falſe, who thinke that the heate of theſe fires, and the aſhes, are the onelie cauſe which maketh their cold countries fruitfull, whereas in deede it is the ſalt of theſe trees,

hearbs,and rootes being burnt which they haue left behinde them. And therefore if my wittes were able to ſearch into all the vertues, and properties of ſalt,I would thinke to doe wonders therby. For euen the *A*lcumiſts giue a blauncher vnto Venus with the ſalt of Tartar, or ſome other kind of ſalt. And ſalt is a moſt neceſſarie thing for the Diers, becauſe that Alom which is a ſalt,draweth vnto it the colors of Braſill,and of Galles,and of other matters,and ſo maketh both cloth, ſilke and leather, to take their die the better, inſomuch as the Diers when they woulde die a white cloath into a redde, are ſometimes forced to dippe it firſt in Alome water. Yea, and ſome kindes of ſalt doe ſo harden yron, and doe giue ſuch temper to the edges of weapons, as that one may cut yron with them as if it were but a peece of wood. What ſhoulde I ſay any more of this ſalt, for it paſſeth my reach to make anie true deſcription of the excellent vertues thereof? Onely I will conclude with this, that if it were poſſible to keepe the ſame from moyſture, then diuerſe ſubiectes wherein it is included woulde laſt for euer, and ſo the ſalt that is in Wood, would defende the ſame from all putrifaction, and if all humiditie might bee defended from entring into a peece of Wood, there would neuer any Wormes breed or engender in the ſame, for it is impoſſible that anie putrifaction ſhoulde beginne, vnleſſe ſome moiſture be firſt kindled by way of putrefaction. Thus much out of the firſt treatiſe.

Nowe I will take out a few of the moſt principall notes out of his large diſcourſe vppon the title of Marle,and ſo proceed from theſe French Theoricks, to ſome Engliſh practiſes.

Marle, ſaith Maſter Barnard, is commonly a white

earth

A practicall discourse vpon Marle

earth which men digge out from vnder the ground, and for the moſt part they are forced to make pits, in ſuch ſort, as they doe for wels before they can come at it, and where they find any ſtore thereof, they laie the ſame vppon their hungrie and barren groundes, firſt in ſmall heapes, and afterwards they diſperſe the ſame vpon the whole fielde, as is accuſtomed in the common manner of dunging. And this marle will keepe the ground whereon it is laide, ſome 10. or 12 yeares in hart, and in ſome countries for 30. yeares. And ſometimes the vaine thereof, beginneth at the verie entrance of the pit, and ſo runneth down many yardes deepe: and ſometime we are forced to digge eight or ten yardes before we can come to the vaine thereof. But one thinge amongeſt the reſt ſeemeth moſt ſtrange of all other (which I haue heard ſome men maintaine) that it profiteth the ground very little, the firſt yeare wherein it is laid abroad, and that by reaſon of his exceeding heat, whereby it burneth vppe the ſeede that is then ſowne. But this is eaſilie anſwered, for that in the groundes bordering vppon the woods of Arden, which are verie colde, they vſe lime in ſtead of dung, and thereby they make ỹ earth moſt fruitfull which was barren before, Now if lime (which is nothing elſe but a baked or burnt ſtone within thoſe fierie furnaces, and whoſe moiſture is altogether exhaled, ſo as there remaineth therin nothing elſe, but the terreſtriall parts repleniſhed with a fierie vertue) be found ſo rich a ſoile, I know not why the heat of marle may not much better be endured. But it is verie requiſite to ſpread the ſame vppon the earth before the winter begin, to the ende that the froſtie weather may the better diſſolue the ſame.

There is ſome Marle that is as white as lime, and

Diuers colours of Marle.

other some that is of a gray or russet colour, some of it is blacke, and some is yellowe. The cause of the white marle proceedeth of his long decoction, that which is blacke may haue many causes, whereof the principall is, that there is not any long time past since the matter thereof began to congeale, and this marle is more easie of solution, and peraduenture some putrified wood, or some minerals, haue turned the matter into a blacke colour. And as for the yellow marle, that colour may happen either of some yron mine, or of some mine of Lead, siluer, or Antimonie, and thus you see the reason of the diuersitie of colours that happen to marle.

That Marle is not hote

Marle is no other thing then a kind of clay ground and therefore seeing clay is cold and dry, as it appeareth by the Marcasites, and by wood that is both metalized and petrified in clay groundes, it is manifest that Marle is also cold and drie, and therefore it is not the heat thereof, which bettereth or amendeth barren grounds.

The beginning of Marle with the transumtation thereof

All Marle was earth before it became marle, it is a kinde of clay ground, and chalke it selfe was marle before it became chalke. And that which is more, that which is yet chalke within the Matrix of the earth, wil in time harden into a white stone. And last of all, whersoeuer there bee any stones that be subiect to calcination, they were firste marle before they were stones, for otherwise by their calcination they could not possibly amend any barren grounds.

Marle to be dissolued by frosts.

When Marle hath once begun to passe his decoction, it becommeth so harde, that the raine cannot dissolue it so soon as wee would haue it, but it remayneth in small peeces vpon the ground vndissolued, & hereby it commeth to passe, that it can impart none

of

of his ſtrength vnto the grounde vntill it bee melted and liquified, and for that this cannot be ſuddenly performed as in the firſt yeare, therefore the froſts in ſome reaſonable time after do cauſe a diſſolution thereof, and then it helpeth toward the generation & germination of all ſeeds, that ſhall be preſented vnto it. Alſo chalke and lime, after the froſtes haue taken them, wherby they crumble into powder, do become good marle, and ſerue in ſtead thereof.

How Marle worketh his effects.

Although I would not haue the generatiue vertue of marle attributed to his heat, yet my meaning is not thereby to rob Marle of his heat: but *I* labour to confute the fooliſh opinion of thoſe, which attribute the whole vertue thereof to his heate, I ſay the vvhole both inwarde and outwarde. For it is well knowne, that ſalt is inwardlie hot, and therefore it is accounted an helpe to the act of generation, and alwaies in extreame cold weather, a man ſhal finde ſalt to be as cold as water, or any ſtone. Whervpon we may eaſilie gather, that his heat could actuate nothing, vnleſſe it were firſt ſtirred vp by a counter-heate wherin conſiſteth the ſeminall acte, and therefore wee muſt reaſon more deeplie, and looke to the eſſential cauſe that moueth and worketh herein, and then wee ſhall finde out ſome hidden matter that is not ſubiect to euerie meane conceit.

A fift element and what it is.

And this is a fift element (neuer known before to the auncient Philoſophers) which is a generatiue water, cleer, ſubtile, mingled inſeparably with other waters, which water beeing alſo brought among common waters, doth indurate and congeale it ſelf with ſuch thinges as doo happen to bee mixed with it. And although the common Waters doe mount aloft againe by the attraction of the Sunne, whether that the ſame bee in Clowdes, Exhalations,

or

or vapors, yet neuertheleſſe the ſecond water which I call a fift element is alſo carried amidſt the others, and when thoſe common waters run downewardes, alongſt the vallies, whether they be flouds, riuers, or ſprings, I ſay that in what ſort ſoeuer they deſcende, or in what place ſoeuer they ſtaie, they doo alwaies frame ſome one thing or other, and moſt commonly either great ſtones, rockes and quarries of ſtone, according to the groſeneſſe of the matter which is ſtained with it, and carrieth the forme of his molde wherin it reſteth, and this being ſo congealed, that common water is ſometimes drunke vp in the earth, and deſcendeth lower, or elſe it is drawne vpwardes, and doth vaniſh away in vapors and cloudes, leauing his companion behind, which he is not able to carry any longer, And thus is Marle engendred, for before it was marle, it was a certeine earth, into which both theſe waters had entred, and had repoſed themſelues for a certeine time: during which reſt, the generatiue water became congealed, and the vaporatiue water paſſed away, and was drawne vp from the other, and ſo the earth (wherein this congealed water did ſtaie) waxed hard, and became white by the vertue therof, being both wrought vp into one bodie, whereby it commeth to paſſe, that when this marle is ſcattered abroad, vpon the arable ground, the ſeede which is ſowen thereon, doth not take of the ſubſtance of this marle, to helpe his vegetation, but doth rather glut it ſelfe with this generatiue , and congelatiue water, which I call the fift element, which generatiue water being once conſumed by often ſowing of the ground the marle becommeth vnprofitable, as a ſign of ſome decoction finiſhed, the like is to be thought of all other dung and lime.

The vſe of the exhalatiue water.

It is alſo to be noted, that the ſeed which is ſowne cannot make any attraction of this generatiue water, if the ſame were not alſo moiſtened with the common water. And that when the ground is moiſtned either with the raine, or deaw that falleth, the common water that deſcendeth, together with the generatiue, ſtayeth the haſtie congelation of the other, whereby it commeth to paſſe, that corne and other ſeedes doe keepe themſelues greene vntill their maturitie, and when they are ripe, and that their roote ceaſeth to drawe or drinke vp any more thereof, the exhalatiue water flyeth away, and the generatiue remaineth, and as the decoction in plants beginneth to perfect it ſelfe, ſo the colour alſo chaungeth, as it commeth to paſſe alſo in ſtones and al kinds of mettall. So as this fift element, although it be a water, & mingled with other waters, yet it is the ſame which doth vpholde both ſtrawe and hey, and al kindes of Trees and plants, yea euen men and beaſtes likewiſe, & of this generatiue ſubſtance, the verie bones both of man and beaſt, are hardned & framed in their kind. And euen as we ſee the pibble or flint ſtones which are formed and engendred of this congelatiue water, doe endure the ſtrength of fire, and are not conſumed therewith, but rather vitrified; ſo in like manner this fift and generatiue element being within ỹ ſtraw and hey cannot bee waſted away, for if thou dooeſt burne them, or any other Wood in the fire, all the cõmon water thereof will vaniſh into ſmoke, but this generatiue water, which hath ſuſtained, nouriſhed & encreaſed both the ſtraw and hey remaineth in their aſhes, and cannot bee conſumed, but turneth it ſelfe into glaſſe, being liquified in thoſe hot flaming furnaces, and the ſame ſo cleere and tranſparant, as the

generatiue water it ſelfe was before this congelation. But there is nothing that more reſiſteth fire then the bones of diuers beaſtes, as I haue often prooued when I haue burned the bones of ſheepes feete, and ſo of egge-ſhelles, which is a manifeſt argument, that they haue drawne more abundantlie to themſelues, of this generatiue water then any other partes. And there is no doubt but there is great ſtore therof in the apple of the eie, which being continually moiſtened and accompanied with the other exhalatiue water, is kept from being hardened into the nature of a ſtone. Neither is there any kind of ſtone which in his principall form is not cleere, and white, and thoſe which be clowdie are ſo by accident, for that in their compoſition, there happened ſome earth or ſande to bee congealed or hardened with their firſt matter. Neuertheles, there is no ſtone ſo dark & obſcure, which by force of fire dooth not become tranſparent at the laſt, bicauſe that principall element whereof I haue ſpoken ſo much, maketh al things elſe become tranſparent and fyxed, as it is it ſelfe in his fyrſt beeing. This I haue written the rather to encourage thee to ſeeke out marle within thine owne inheritaunce, to enrich thy barren groundes, that they may yeelde their fruit aboundantlie in their ſeaſons. And in ſo dooing, thou ſhalt ſhewe thy ſelfe a good husbandman, and become a patterne to all thy ſlothful neighbours, whereby they ſhall bee forced to imitate thy good example.

How Marle was firſt found out.

Now concerning the fynding out of this marle, I thinke that thoſe which fyrſt happened vppon it, did not obteine this skil by any true theoricall imagination, but that by meere chaunce, they did fynde the ſame without any ſeeking, as peraduenture by the digging

digging of ſome Ditch or other trench, about their ground, and beeing forced to throwe vp that which they had digged vppon the bankes of their arable fyeldes adioyning, and fynding ſuch Corne as happened to be ſowne vpon theſe bankes, to bee more freſh and ranke then in any other part of the fyelde beſides, they proſecuted this good happe of theirs further the next yeare, and ſo ſpreade the ſame ouer the whole fyelde: and ſo by long experience, and in the ende they found the ſame much more profytable then any other dung, and ſome others peraduenture might happen vppon the ſame in ſeeking for ſprings, in like manner. Yet it is alwaies to be noted that this marle muſt fyrſt be diſſolued throughout the ground before the ſeed can make any attraction thereof vnto it ſelfe: euen as fleſh cannot purchaſe a defenſatiue againſt putrefaction by ſalt, vntill the ſalt bee melted and made liquid.

But for the more eaſie fynding out of this marle, I thinke it neceſſarie that euerie man ſhoulde haue a long Auger or Percer, with ſeuerall large bittes which he may put on and take off at his pleaſure, and with theſe hee may ſearch at what depth hee will, in diuers places of his Lande, alwaies marking what ſeuerall vaines of earth he fyndeth in the bytte of the Augur, and of euerie ſeuerall earth which hee draweth vppe, he may make ſome triall vpon the ground, vnleſſe he can be aſſured by the whiteneſſe and hardneſſe thereof that he hath hit vppon the right Marle: for then he needeth not to proceede to any further Triall. How men may ſearch for Marle.

And hauing once found the vaine, hee may lay it open in ſuch ſort as may be moſt conuenient for the euacuating thereof. Nowe if there happen to bee

any quarrie of ſoft ſtone betweene him & the marle: he muſt firſte make his entrance thorough the ſtone with a piercing worme, and then hauing made waie, he may ſeeke further with his foreſaid Augur.

Dolors of Marle.

Marle for the moſt part is white, yet in diuers parts of Fraunce, there is both gray, blacke, and yellowe, and therefore we muſt not whollie reſt vpon the colours thereof, for theſe other colours may become white by a longer decoction, and as there is a white marle, ſo likewiſe there is a white clay, which I think will ſerue in ſteade of marle, eſpeciallie that fulling earth, wherewith the fullers vſe to ſcoure out oile out of their cloathes.

A white claie. Fullers earth

That Marle is not of a fatty nature

It is an erronious opinion, to thinke that Marle may be diſcerned by the feeling of the hands, as ſome doe holde, and that it is to bee knowne from other moulds by the fattines, or viſcouſnes therof, which is falſe, for if it were fatty, it would be impoſſible eyther for raine or froſt, to diſſolue the ſame, for all oylie thinges do reſiſt and ſtriue againſt water, yea wee ſee apparantly, that both clay & marle do help to ſcoure out all greaſie and oylie ſpots, as Fullers can well teſtifie, and if marle were of an oylie Nature, it woulde conſume in the fire, but if we make any proofe therof, we ſhall finde the ſame moſt violently to reſiſt the fyre.

And in the latter end of his Philoſophical abſtract, Maiſter *Barnard* concludeth thus, that marle is a naturall, and yet a diuine ſoile, beeing an enemie to all weedes that ſpring vppe of themſelues, and giueth a generatiue vertue to all Seedes that are ſowne vpon the ground by the labour of man, and heere endeth Maiſter *Barnard.*

A man would thinke that ſo learned a Theorick as this

this in a matter ſo generall, and neceſſarie for the Realme of Englande, ſo plawſible to worldly wittes, and ſet down in ſo plaine and familiar tearms, could neuer haue beene extant ſo manie yeares together with ſo little fruit, and profite vnto all our leane and barren groundes, as (for ought that I can ſee or heare) it hath beene hitherto, and ſo is like to continue, vnleſſe ſome ſtudious ſcholler, or other, will ſteppe foorth, and take our idle Farmers by the hand, and either leade them ouer ſhooes into one of Maiſter *Barnards* Mucke-heapes, or elſe by violence thruſt them into one of his Marle-pittes. For what eaſier courſe can poſſiblie bee directed by the Penne of anie Writer, then is heere deliuered for the finding out of Marle? Or what cheaper tooles coulde the witte of man deuiſe, then an hande, and a piercing Augur to ſearch into the bowels of the earth for all her marrow, and fatneſſe? Doe wee thinke that Nature is bounde to caſt vp the treaſures of her full gorge amongeſt vs, who will not vouchſafe one pipe of *Tabacco* vpon her? *Effodiuntur opes*, ſayeth *Ouid*, vnto all flouthfull husbandmen, and therefore ſeeing wee may haue ſuch wealth for the digging, let vs not ſpare the Shouell and Mattocke, till wee haue founde out ſome Marle-pittes in our owne demeſnes. For the veynes of Marle are more in number, much longer and broader, and deeper than wee thinke for, and though wee finde them not in one place, yet wee ſhall happilie finde them in another. It is a ſmall aduenture to hazarde a ſhilling to gaine a pounde: it is no loſſe to ſet poore men on woorke, (which otherwiſe in conſcience wee beeing able, and they beeing honeſt, we are bounde to relieue) though they gaine vs nothing, our great poſſibilitie

Howe to find our Marle and the vſe thereof.

may easilie counteruaile their small charge. Regarde not the colours of the mould, you see that maister *Barnard* heere telleth you of a white, of a gray, of a blacke, and a yellowe Marle. And whie may there not also bee some other colours of Marle in our Countrey which Maister *Barnard* neuer knew? It is a small matter to trie the seuerall natures of all the veynes which you finde in digging, you may prooue of euerie kinde a little, in diuerse places the first yeare, and so proceede to a greater tryall the next yeare, as your good successe shall encourage you.

Colors of Marle.

And though you finde but small amendment in the first proofe, yet practize againe, for it may bee you layde either too little, or too much thereof vpon your ground: for too little of the best Marle can doe but little good, and too much therof hath beene alreadie founde to bee verie hurtfull to the Corne. And therefore vntill you haue attayned vnto the verie pricke of proportion, learne first all the experience which you can drawe from other men, and then prooue what further perfection you can adde thereto your selfe. Examine the seasons of the yeere, in which it is best to lay abroade euerie kinde of soile, for if the same bee of an harde and binding nature, then Maister *Barnard* telleth you, that it muste bee layde in the beginning of Winter, that first the frosts maie make the same to moulder into small peeces, and so to become apt for solution, and then the raine which commonly dooth fall more aboundantlie in the Winter then in the Sommer time, may perfectlie dissolue the same. If it agree not with one sort of soyle, peraduenture it will agree with another. It

Proportion of Marle.

Seaſon to lay marle abroad.

Vpon ſeueral grounds

may

may ſerue an arable grounde, and not a paſture ground, or a fennie, and not an heathie, or a Clay ground, and not a ſandie ground. Peraduenture it may proue good for one kinde of graine, and not for another. And therefore you muſt neuer reſt till you haue made a full tryall of all the inward veynes of the earth, in all the ſeaſons of the yeare, in all degrees of proportion, in all kindes of graine, vpon all ſortes of grounde, with all ſuch like neceſſarie circumſtaunces, and ſo in the ende you ſhall finde out thoſe differences, and make ſuch obſeruations to your ſelfe, as the ſlugguiſh and idle loyterers of our time (though they haue the ſame matter to worke vpon) ſhall neuer bee able to reach vnto, or imitate.

In ſeuerall ſorts of graine. Circumſtances.

Fullers earth.

The Fullers earth which Maſter *Barnard* heere mentioneth in his title of Marle, and commendeth to the ſame ende, I haue not knowne at anie time practiſed in Englande for the bettering of anie ground, but by all preſumption the ſame muſte of neceſſitie bee verie rich, becauſe it is full of that vegetatiue ſalt, ſo highlie commended by this French Authour, which appeareth in thoſe ſcowring effectes, for the which it is diuerſe wayes had in vſe amongſt vs, and if the ſame bee to bee had in anie plentifull maner, I coulde wiſh that ſome exact proofe were made thereof, according to the former circumſtaunces. And heere I can not omitte the carefull induſtrie of that ingenious, though vnlearned olde man. Who hauing long ſince cutte off that vnprofitable exchaunge of our Engliſh ſiluer, with thoſe French and Leaden trifles: hath alſo giuen himſelfe to diuerſe other profitable and ingenious practiſes,

amongſt

amongſt the which he hath aſſured me of this one to be moſt true, that euen the very clay which he digged vp in Saint Georges fields, beeing laid vppon his paſture grounds which hee there holdeth by leaſe, did exceedinglie enrich the ſame, inſomuch as hee did neuer regard to ſeeke after anie other ſoyle. And this hath alſo ſome credite with maſter *Barnard*, which affirmeth that all Marle is a kinde of Clay grounde, and it ſhould ſeeme to differ onely in digeſtion from Marle. And in another place hee ſetteth downe his opinion of a white Clay, which hee found as hee trauelled in France toward Poicters, and Towers, that he held the ſame to be equiualent to Marle it ſelf. And it ſhould ſeeme by all reaſon, that the like order is to be vſed therein in beſtowing it vpon the ground, as is before expreſſed in Marle.

Clay inſtead of Marle.

I may not here omit to commend the ſoyle of the ſtreetes, or reſidence, and groundes of all Channels, Pondes, Pooles, Riuers, and Ditches, and of all other pannes and bottomes whatſoeuer, where anie ſtore of waters do repoſe themſelues, but eſpecially where any abundaunce of raine water hath a long time ſetled, for that the congelatiue partes of theſe waters, bee full of the vegetatiue ſalt of Nature, as Maſter *Barnard* noteth, who is verily perſwaded that there is no other reaſon to bee giuen of that heartie fruitfulneſſe, which the fallowe groundes doe gather againe in time, but onely the generatiue part of raine water, which dooth fall vpon them ſo often, whileſt they remaine vnſowen with graine. For to imagine that the earth by quietneſſe or reſt alone, ſhould become fatte againe without the miniſtring of anie other nouriſhment or foode vnto it, were as much agaynſt all ſenſe and reaſon, as to thinke that a languiſhing

The ſoile of the ſtreats, and the reſidence of all watrie bottomes.

ſhing patiente ſhoulde in tyme recouer his former ſtrength by keeping of his bedde only without taking of any cordiall or reſtoritiue broths for his comfort. Wherefore ſeeing there be ſo many pannes, and receptacles for waters in euery ſhire, in one place, or other, and ſeeing nature alone miniſtreth matter enough for vs to worke on, but wanteth handes onely to bring things together, let vs ſeeke to helpe nature a little with our hands, and ſhe will retourne our labour againe with an exceſſiue vſurie into our boſomes.

Mooriſh earth,

There is alſo a kind of mooriſh earth, which being laid after 20. or 30. loades vpon an acre, will amend, and better your paſture grounds a long time after.

Dung of beaſtes.

I will paſſe ouer all the triuiall vſes of Cow-dung, Horſe dung, folding of ſheepe, Hogs dung, Pigeons dung, and ſuch like, for that they are already knowne, and common in this land with euery Country *Coridon*, yet I thinke it not amiſſe to ſet dowe ſome neceſſary obſeruations in them, ſuch as I haue partely drawne from conceipted wits, and partely haue imagined my ſelfe by the contemplation of natures workes. And therfore here I can by no meanes allow of the ordenary manner, in laying abroade of our greate muckheapes, wherein Maiſter *Barnard* telleth vs that the winter raine which falleth vppon them, carieth alſo with it a greate parte of their ſtrength, ſo as the vpper parte of them becommeth very leane, and hungry, and is ſcarſely worth the cariage, and ſpreading abroad. But I knowe that the Farmers of our land will aunſwere me in this point, that it is too coſtly to build barnes, or other couerts for dunghills, but my meaning is not to perſwade them thereto (although peraduenture if wee did erect a fewe ſtreight trees, or firpoles, and make a looſe thatched, or bor-

Muckheaps how to be made.

A couert for a muckheape.

ded cap to couer it, which might ſlip vp and down at what heigth we thought good, as they vſe in the low Countries to make their barnes,(a patterne whereof ſtandeth to be ſeene nere vnto S. *Albones* not far from Parkmill, in the backeſide of one of my tennaunts howſes there) that ſo the goodnes of the ſoile would in a few yeares counteruaile the charge of our building) but rather that they woulde place the muckheapes vpon the foote of ſome hill (making a little ſquare receptacle of bricke in the bottome thereof) whereby all ſuch ſtrength, and ſubſtance of the dung, as all the ſhowers of raine that fal, ſhal carry with thē, might with a free diſcent be conueied into this pit or ceſterne, ſo as the ſame in conuenient leiſure mighte alſo with ſcoopes, and other ſhouels, be continually returned vpon the muckheapes from time to time as it fell, whereby the greateſt parte of that vegetatiue ſalt, which nowe is loſte in euery farmors yarde or backſide, might be preſerued for the better manuring of the ground.

A receptacle of brick,

Some be alſo of opinion that it helpeth much to the bettering of our dung, if al the brine and powdred beefe broth which is commonly throwne away, were powred vpon the muckheapes, thereby to multiply their ſalte. And Maiſter *Barnabe Googe* will haue all the ſuddes of his landery conueied thereon, and the muckheapes to be couered with bowes, to the ende that the Sunne may not draw away any parte of the ſtrength thereof. And becauſe we are now entred into the moſt principall, & generall practiſe of this land whereby the greateſt parte both of our paſture, and arrable grounds are vſually bettered; it ſhall not bee amiſſe to ſette downe ſome new, though a very eaſie courſe, howe wee may the ſooner bringe our dung to putri-

How to rot dung ſpeedily.

putrifaction, and ſo thereby not onely obtaine ſuch ranke paſture as now we haue by reaſon of the ſame ſoile, but alſo that we may purchaſe a much ſweeter graſſe, or feeding for our cattell, then hitherto wee haue had, for that (as I conceiue) is the ſpeciall fault of the firſt crop which our ground bringeth forth after it is newly dunged. And this common errour of ours (if I be not deceiued) is eaſilie helped, & that only by making, firſt a lay of dung of a foot in thickneſſe, & then a lay of earth vpon the ſame, and then another lay of dung vpon that earth, and ſo proceeding in the maner of *Stratum ſuper ſtratum*, til your muck heape bee as large and high as you woulde haue it.

To haue ſweete gras at the firſte yeares dunging.

But this practiſe woulde alwaies bee perfourmed, either vpon the ground which wee meane to enrich, or very neere vnto it, leaſt that which we get in the goodneſſe of the graſſe, we doo happilie looſe in the charge of our labour, and cariage. And heere it ſhall not be altogether vnprofitable, to let all thoſe Gentlemen and Farmors, who are deſirous of ſome ſpeciall good mould, for ſome ſmall purpoſes, to vnderſtand, that after they haue disburdened ỹ ground of this great muckheape of theirs, that if they will yet digge a foot and a halfe or two foot vnder the ſame, that by this meanes they ſhal obtaine a moſt fat and rich earth, and very apt for diuers plants, as al our ordinary Gardeners, can ſufficiently witneſſe.

A rich molde for gardens, & orchards.

Thus much of the ſoile or dung it ſelfe, being diſperſed in his groſſe body. Now a worde or two of thoſe conceited practiſes, which I promiſed before. I haue heard ſom ſtudious practiſers very cõfidently affirm, that if you ſteep your corn in water ỹ ſpace of certein houres (but I could neuer yet finde them all agree in on time: for ſom limit 12. houres, ſom 18. & ſom 36. houres, you may proue them all, and keepe the beſt)

Of ſteeping corne in dung water

in water wherein good ſtore of Cow dung hath lyen in imbibition, for certaine daies (which times you muſt alſo ſerch, if you meane to be an exact maiſter) euery day ſtirring the ſame once, or twiſe together before you lay in your corne, and after this preperation you ſowe the ſame (though in barren grounds) that ſo you ſhall purchaſe a moſt rich, and plentifull crop with an eaſie charge. But this kinde of practiſe I haue heard both maintained, and impugned aſwel by reaſon as by experience, and that by men of good iudgement on both ſides, although if I woulde ſette downe mine owne experience herein, I muſt needes confeſſe I could neuer yet attaine to any truth in this ſecret, or to make any apparant difference betweene the corne that was husbanded in this maner, & that which grew of it ſelfe without any ſuch helpe, yet will I not (for the credit of the Reporters) altogether diſcredit the inuention, for that peraduenture I mighte faile in the nature of the graine, or in the time of imbibition. And as it ſhould ſeem great ſtore of thoſe vſuall receipts, which are common in our ordenary books of ſecrets, is drawne from this ground, wherby they labour to alter, and change the ſmells, taſtes, colors, and vertues of many fruits and plants, only by ſteeping the ſeeds in ſuch Aromatical waters, as they themſelues apropriate for ſuch vſes, as they entende them, & therfore they tell vs, that ſteeping of ſeeds in the infuſion of wormewood, centuary, coloquintida, and ſuch like, will defende them from wormeating, which for the preſent time I do eaſily beleue, but how then commeth it to paſſe, that theſe ſeeds do not alſo bring forth bitter fruite, according to their infuſion? and yet it is generally thoughte that the cloue-gilliflower gotte his firſte ſent from the cloue, which

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was conueyed into his ſlip, but this I holde for an erronious opinion, and to bee as falſe as it is olde, for neither is there any phyloſophicall, and inſeparable combining of their two natures, perfourmed in this groſſe practiſe; neither can ſo ſmall a ſubſtance (beeing neither truely prepared, nor exalted before) extend it ſelfe ſo infinitely from one ſlip to another, as we ſee daily perfourmed, in that ſweet and beawtiful flower.

I haue here yet one experience more to ſet down in this kinde, which (becauſe it was the practiſe of a ſpiritual Lord, that died of late, and fell out very happilie, as I haue beene credibly enformed by one of his eſpeciall officers, who with diuers others was an eiewitneſſe of the ſame: although it vary not much from the former courſe,) I wil publiſh the ſame vnto al poſteritie, vnder ſuch credite, as I my ſelfe did firſt receiue it. And therefore, whereas before you ſteeped your corne in the water, which had ſucked out the ſtrength, or ſalt of the dung, you muſt nowe mingle your dung, your water, and your corne together, in a great veſſell of wood, and you muſt ſtirre the ſame well, with an apte ſtaffe for the purpoſe, one whole houre at the leaſt: This worke you may begin in the after noone, and toward Euening you muſt recontinue your firſt agitation for one halfe houre, or more: then let theſe ſubſtances repoſe themſelues all the night following, and in the morning, or ſometime the next day, you muſt ſuffer the water to paſſe away by ſome tampion, according to the manner of the ſaltpeter men: & when the liquor is ſufficiently dreined, then mingle the corne and dung throughly wel together, and after ſow the dung and corne ſo mixed in a barren and hungry mould, and you ſhall haue as

rich a crop, as if the groud it ſelfe had beene dunged before. This experience was made, in an hartleſſe peece of ground, which lacked alſo one tilth, and which no man durſt aduenture to ſow with any grain and yet my Lord biſhop did by this meanes, attaine to a moſt plentifull wheat harueſt.

A practical diſcours vp on ſalt.

Now let vs proceed to the ſweeteſt, cheapeſt, and moſte philoſophicall marle of all other, euen that which both *Valetius* and maiſter *Barnard* haue ſo cloſely, and theoricallie handled, as that (notwithſtanding the one telleth vs of the exceeding fertillity, that is found in ſalt waters, by that infinite generation and multiplication of fiſhes, yea of Venus her ſelfe, that *Primum mobile*, in the procreation of children, and the other of thoſe pleaſant grapes, growing in the ſalt Mariſhes of *Xantoigne*) yet neither of them haue left vs any aſſured meanes, how wee may purchaſe any ſtore of this ſalt, whereby wee may make any great vſe thereof. So as notwithſtanding we are now brought vnto the riuers of life, and to that goodly tree ſo laden with golden apples, yet here wee are left with *Tantalus* to ſtarue and periſh for want of food. Yea maiſter *Barnard* himſelfe, after that hee had ſo ſweetlie ſeaſoned our eares with his brackiſhe philoſophy, yet in one place (as if hee had repented himſelfe of his too much forwardneſſe, in theſe his ſecret diſcoueries, nay, as if he had the greateſt ſecret of nature in hand) he telleth vs in plaine termes, that it is not the common ſalt, but the vegetatiue ſalt, which he ſo commendeth. Nay, that which is more, in the examination of the Indges cenſure, vpon the groundes of condemned perſons, wherin they would haue their landes to be ſowed with ſalt, in token of a prepetual barrenneſſe, he faltreth and ſtaggereth, and

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can finde no reaſon to maintaine their iudgementes, vnleſſe it were as he ſaith, in reſpect of the nature of ſome countries, where ſalt was an enemie to al ſeeds. Why how now maiſter *Barnard*? Is it poſſible, that you, which could firſt find out the meanes, howe to furniſh vs in al places, with new ſprings of ſweet and delicate waters, where there was neuer any before, that could firſt finde a fift element, which nature had hitherto locked vp in her owne cofers, which coulde teach vs the reaſon of al petrefiyng, vitrifying,& metalizing of earthy bodies, yea which could ſo learned lie ſet downe, the generatiue reaſon of al vegetables, ſhould now be ignorant howe to reconcile earth and ſalt togither: or how to turn a common ſalt into a vegetatiue ſalt? Yet *Valetius* dealeth more plainely with vs (according to that light which hee had receiued) ſaying, that if too much or too little, doe in any one thing make an apparāt differēce in ẏ effects, then ſurely of al others, the ſame is moſt eſpecially to be ſeene in ſalt; and ſo he would haue the curſed effects of that ſentence, to proceede from the exceſſiue proportion & quantity of ſalt, that is beſtowed vpon the malefactors grounds. But ſuppoſe that *Valetius* hath not only aimed faire like a gētlemā, but alſo hit the mark, like a a good archer in this point: wher is now this vegetatiue ſalt become, which M. *Barnard* ſo highly extolleth? or how ſhal we obtaine any ſtore thereof, for the enriching of ſo many thouſand acres of barrē groūd, as this realm of England doth preſent vnto vs? Meethinks I am now in the midſt of a ſtop galiard,& were it not, that I ſhould heere offend ſo great a concourſe of people, as I haue nowe gathered together, in mine owne conceit, *I* coulde finde in my hearte to commaunde the Violands to ceaſe, and ſo to breake off

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in the midſt of a rough Cinquepaſſe. Neuertheles, crauing pardon of all the ancient Philoſophers heerin, but eſpecially of M. *Barnard* (who if he had bin diſpoſed, could haue eaſed me of this labour, & performed it much better) I will onely requeſt with *Sinon*, *Fas mihi Graiorum ſacrata reſoluere iura*, and ſo beſtow a new taske vpon Nature, who wil be ready to yeeld vs great ſtore of the richeſt Marle-pittes, and ſuch as haue not hitherto beene diſcouered, but onelie in phyloſophicall tearmes to any Nation, or countrie whatſoeuer: hoping hereby, that as the ſecret which I haue now in hand, and ſeemeth almoſt incredible before it be diſcloſed, ſhall procure ſome further credite & beleefe, vnto the reſt of my inuentions, wherof I haue alreadie giuen a taſte, by a publique impreſſion, and yet reſeruc ſome fewe till I finde a better opinion conceiued of Engliſh Artiſts.

Now then let vs firſt examine, what eſſential difference we can finde, in thoſe foure elements, whereof all the inferiour bodies doo conſiſt? or whether they may be all reduced to one, notwithſtanding the manifeſt oppoſition that ſeemeth to be in their contrary qualities? And for my part, I muſt here acknowledge that the beſt naturall phyloſophie that euer I coulde learne in this point, was neither out of Ariſtotles phiſicks, nor Velcuries naturall philoſophy, nor *Garſceus* meteors, nor out of any of the olde philoſophicall Fathers, that writ ſo many hundred yeares paſt; but that little which I haue, I gathered it on the backſide of Moore fieldes, where by ſundrie vndoubted argumentes, I did heare it maintained, that all thoſe elements, doo onely differ in attenuation, and condenſation: ſo as earth beeing attenuated, becommeth water; and water condenſate, becommeth earth;

water

water attenuated beecommeth aier, and aier condenſate beecommeth water; and ſo likewiſe aier attenuated becommeth fire, and fire condenſate becommeth aier, and thus all of them ſpring from one roote, which being admitted is a manifeſte proofe that there is a greate, and neere affinity betweene the lande, and the ſea, wherein we ſhall finde ſalte water enough for our purppoſe. And yet further wee ſee that of the earth, and water together are made one globe, ſo as a ſmale matter will make them frendes being ſo neerely vnited together. And nowe I may well ſay that I am entred into an whole ſea of matter, from whence I muſte fetch the greateſt ſtore of my vegetatiue ſalte, and if this ſtore-houſe faile me, I knowe not whither to repaire for ſuch plenty of ſalte, as I muſt be forced to vſe in this action. And becauſe you ſhall vnderſtand that I am now in a right courſe, let vs conſider of a fewe experiences already performed in the like kinde; which becauſe at the firſte they were found out by meere chaunce, and not by iudgement, the Authors of them could as yet neuer extend them to any generall, or publique vſe: but haue hitherto walked continually like petite conſtables within their own precincts. Amongſt the which, the firſt practiſe that euer I heard of, was of a ſillie ſwaine whoe paſſing ouer an arme of the ſea with his ſeede corne in a ſacke, by miſchaunce at the landing, his ſacke fell into the water, and ſo his corne being lefte there til the next low water, became ſomewhat brackiſh, yet ſuch was the neceſſity of the man, asthat he (not whithſtanding hee was out of all hope to haue any good ſucceſſe thereby, yet not being able to buie any other) beſtowed the ſame wheat vpon his plowed groundes, by the aduiſe of a gentle man of good

worſhip frō whence I receaued the report thereof,& in fine when the harueſt time came about, he reaped a rich crop of goodly wheat,ſuch as in that yeare not any of his neighbours had the like,& yet notwithſtāding (for ought that euer I could yet learne) neither he nor any other of his countrimē would euer aduenture to make any further vſe therof, belike being perſwaded ,vnles that the corne by chaunce fell into the ſea,it would neuer fructifie. What ſhoulde I ſpeake here of him that of his owne mother witte ſowed a buſhell of ſalte long ſince vpon a ſmal patche of barren grounde at Clapham which to this daye remayneth more freſh and greene, and full of ſwarth then all the reſte of the fielde about it ? But this man had ſome more reaſon then the other, not to proſecute ſo chargeable a practiſe any further, for that he knew well that one buſhell of ſalte woulde counteruayle two loodes of the beſte dunge there , whereas the former practicer, mighte haue had ſea water at will for the fetching.

Salt ſowed at Clapham

I mighte here adde the dayly, and vſuall practiſe in the Weſt partes of this land, where the people to their greate charge in cariage, doe conuaie the ſaltiſh ſandes, vnto their barren groundes, whereof ſome of them doe lye fiue miles diſtant from the Sea. And yet they finde the ſame exceeding profitable,for that their inheritance is thereby enriched for many years together, and who ſeeth not that the whole ſtrength, and vertue thereof conſiſteth in the ſalteneſſe, for otherwiſe wee mighte happely finde ſome other ſortes of ſand that woulde alſo bee equivalent vnto this. But to ſette downe one experience that may ſerue for a thowſand becauſe it conſiſteth

brackiſh ſandes.

of

of nothing els but ſalte. So that here is no partnerſhip at all, no ace of harts nor fiue fingers to bee ſuſpected.

Before you ſow your ground, do but only mingle two buſhels of bay ſalte, amongeſt foure buſhels of winter graine, and ſo diſperſe them together vppon the ground, and you ſhall finde a good encreaſe of corne and the land it ſelfe muche bettered, and cleered of weedes, as I haue beene very credibly enformed. But of all others I wonder moſte of all at the ordinary experience which hath ſo longe time in the view of ſo many perſons, beene yearely practiſed in the fieldes, neere adioyning to the ſalte pits of Nantwitch, where vpon the fall of any greate ſtore of land waters into their pits, being forced to empty, and drawe out all the freſh water which alwaies floteth vppon the brine, and to beſtow the ſame in ſuch places as are neereſt, and therewith alſo emptying ſome of the brine with the freſh water, they finde in time this earth ſo ſtrongly ſeaſoned with theſe brackiſh waters, that no ſoile or dunge is comparable vnto it, for the manurance of their groundes. And is it poſſible, that ſo many ſharpe, and choiſe wits, ſhoulde till this day neglect ſo rare, ſo rich, yea ſo meſtimable a triall as this, and not one amongeſt a thouſande that hath ridden from thence to Weſtcheſter, ſhuld haue beene able to haue caried the ſecret ſo farre, but muſt ſo careleſly, and retchleſlye drop the ſame by the way? But to com yet neerer to our purpoſe, what ſhall wee ſaye, or thinke of that ſurrounded leuell at Erith?

The brine of the Salt-pits.

Erith breaches.

I dare not report that exceeding fertilitie which I haue herd commended in thoſe two breaches, euen

by the ſeuerall farmers thereof: and though we may in ſome meaſure excuſe our groſſe capacities for not applying thoſe viſible effects of the brackiſh waters, which had many years togither, repoſed themſelues in the greater breach, becauſe the ſame was but lately inned, yet what ſhall we ſay for the leſſer breach, which hath bin woon ſo long ſince? Was it not ſufficient, to haue buried ſo many thouſands of our Engliſh pounds, in thoſe Dutch and drunken deuiſes, about the gaining of the grounde (in the time and charge whereof, ſome Engliſh wits that I coulde name, did offer to make a great and gainefull accurtation, and yet could not be heard) but that wheras nature her ſelfe preſented in thoſe breaches, a full recouerie of thoſe expenſes, to ſuch as are ſtudious; that yet we ſhould remaine as blinde as beetles, not once examining, from whence this aboundant fruitfulneſſe ſhould ſpring, or growe? Nowe *I* finde that ſaying of the Philoſopher, as concerning Nature, to be moſt true: *T*hat ſhe doth offer and diſcouer her ſelfe in the moſt plaine, and vſuall actions, wherein we doo daily buſie our ſelues, and yet ſcarcely any man doth apprehend her. The ſillie country wench, churneth creame into butter with a ſimple ſtaffe, and in a plaine veſſell, onely by ſtirring vppe the inwarde fire of nature in his owne center, whereby it maketh a true and philoſophical diuiſion of partes, yet whoe is the wiſer for it?

But to returne to our ſalt againe, and to giue ſome colour to this weake contemplation of ours, peraduenture ſome men (and thoſe alſo not of the meaneſt conceit) who hauing a continual eie vppon the ſalt marſhes, wher euery acre of ground is ſo little worth, do therefore vtterly condemne the vſe of brackiſh waters,

waters, as the waſtefull deſtroyers of all generatiue vertue. Indeed I know, and haue found it moſt true, in mine owne experience, that if any vegetable whatſoeuer, haue by miſhap taken any ſalt water, that the ſame is moſt vnapt to bee ſtirred vppe to any true or kindlie workemanſhippe, but the reaſon heereof, I muſt conceale for a time, it ſhall now ſuffice to aunſwer that other obiection, which ſeemeth like a force able ramme, to beat down al the foundation & building which we haue hitherto made. But this I may ſufficiently refell, by that *Nimium* of *Valetius*, which is daily to be ſeene in thoſe Marſhes, and maketh the graſſe thereof euen brackiſh, to al the cattel that feed thereon, although in the manifeſtation, and whole diſcouery of the ſecret which I haue in hande, the ſame is elſe-where, more fullie and plentifully aunſwered. What is then remaining, ſeeing that the ſalt of Clapham, thoſe Weſterne ſandes, that brine of the Cheſhire ſaltpittes, the reſidence of thoſe brackiſh Waters at Erith, doo offer ſo liuely demonſtration vnto vs of the vndoubted fertilitie, which is ready to ouerflowe our bankes if we wil but onely giue paſſage vnto it: but that wee doo nowe and than ſuffer a voluntary inundation and deluge, by thoſe brackiſh Waters of the Sea, vppon ſome parcel of land, that is adiacent thereunto? which after they haue ſufficiently repoſed themſelues thereon, we may by conuenient ſluces, returne the ſame againe, and ſo leaue the earth to her owne workemanſhippe, whoe by her inwarde heat and tranſmuting nature will in ſome reaſonable time, by way of putrifaction conuert that, which was before a common ſalt, into a vegetatiue ſalt, ſo as although wee had iuſt cauſe before, to feare the extreame drying, or burning na-

ture of ſalt, yet now when the ſame is made familiar, and as it were of one nature with the earth, it becommeth a moſt enriching ſubſtance: but leaſt (whilſt I go about to benefit the poore and honeſt Farmours of the land) I happen by theſe newe deuiſes, to hurt and hinder them againſt my will, and honeſt purpoſe; I woulde wiſh them firſte to conſider aduiſedlie of the whole diſcourſe, and to read it ouer againe and againe, before they put the ſame in practiſe. leaſt peraduenture, they take a ſword by the point, and ſo hurt themſelues by that weapon, which was giuen them to defend their perſons. And let this be a generall caueat vnto them, that they begin with ſmall practiſes, and firſt vppon arable groundes, before they proceed to paſture, or meddowe: and ſo beeing carefull in thoſe former circumſtances, which I haue handeled at large in the title of Marle, they ſhall no way endanger their eſtates, nor hazzard any great loſſe, before they attaine their deſires. Neither would I haue them perſwaded, that my meaning is that they ſhould ouerflow any groundes, which eyther they haue ſowed alreadie, or meane to ſow preſently with their graine, but rather ſome waſt ground or other, which after it hath beene glutted with ſalt water diuers times, and then repoſed it ſelfe a ſufficient time, might ſerue in ſtead of marle, or other dung to ſpread abroad vpon their barren corne groundes; but how often the ſame ſhould bee ouerflowne, and in what time the earth will ſufficiently putrifie and tranſmute the ſalt, before it wil bee ſeruiceable in this kind, I wil not heere determine: yet ſince the ſame is ſo wel performed, neere the ſalt pits where there is not any artificiall obſeruation at al made, I think him to be of a very groſſe conceit, who after he hath conferred

ferred with thoſe of Nantwich in this behalfe, ſhould not be able to effect the like, in any parcel of land that bordereth vpon the Sea, or any arme thereof; yet it ſhal not be amiſſe for them to know this difference, that the brine of ſome of thoſe ſaltpits, dooth holde one third, or one fourth part of ſalt, whereas the Sea water dooth not for the moſt part containe aboue one eighteenth or twentith part of ſalt, which would make a great difference betweene them, but that much land water is alſo laded out of thoſe pits among the brine.

And now by this time I hope you are well furniſhed with ſalt, at an eaſie price, as alſo with the means howe to make the ſame of a vegetatiue nature. It were but in vaine here to entreat of the nature of that ſalt, whereof the Peter men doo gather a buſhell or two at the moſt, from thirtie tunnes of earth, & therfore howe excellent ſoeuer the ſame be in his kinde, it wil not profite vs much in this worke, becauſe the ſtore thereof is ſo little. Now I wil proceede to ſome other ſorts of ſoile, which be excellent in their kinde, but moſt of them appropriate only to particular places, and ſome of them not to be had in any great quãtity, and therefore fitter for gardens, or for the trial of maiſteries, then for the enriching of arable or paſture grounds, amongſt ẏ which, I wil alot the firſt place to the putrifaction of vegetables, becauſe there may ſome reaſonable ſtore be had of ſome of them, in certaine places, & then to the calcination of them, wher by they are firſt reduced to aſhes, & after thoſe aſhes may be diſperſed on ſuch barren grounds, as ẏ proprietors of them ſhal make beſt choiſe of. And for ought that I could yet imagine, I hold ẏ brakes or fern to be both the cheapeſt, yea moſt plentiful, and that which

may

may beſt be ſpared of all the vnneceſſary weedes that growe, and that you may ſooner rotte, and putrifie them, you muſt mingle good ſtore of earth amongſt them, or elſe make ſeuerall beds, or layes of earth, & ferne one vppon another; till you haue made as it were a large muckheape of them, and ſo let them reſt till they bee wholly conſumed into a fine earthe, or mold. Although I could name a Yorke-ſhire knight who dooth onely beſtowe the ferne it ſelfe in ſome good thickneſſe, throughout all the allies of his hop-garden, whereby both the rootes of his plants, are keept the moiſter, and alſo hee doth yeerely gather a rich molde out of his allies, to amende, and better his hop-hils withall.

How to putrifie ferne ſpeedily.

And here I haue iuſte cauſe offered me to commend alſo the manner of polling of his hops, which hee placeth in ſuch ſorte, as that one plant may not ſhaddow another: but that his whole garden receaueth the fulnes, & ſtrength of the ſun-beams at once, whereby both his hops are more kindly, and the bels of them much larger then in any other hop grounds, whoſe poles, are erected, and ſtand vpright after our ordenary and groſſe manner. But becauſe my promiſe was not, to deliuer any skil at al in hopgardens, I wil reſerue this concluſion, with ſome other ſecrets in hoppe grounds, not yet diſcouered or brought in publike vſe, for ſome apter occaſion, *vt ſemper nouus veniam.*

New māner of poling of hops.

And that *I* may not ſeeme, to haue loſt my ſelfe, in the midſt of theſe brakes, into the which I am now ſo deepely entred, I would haue that, which is heere ſpoken of the Ferne onely, to bee generallie vnderſtood of al ſortes of plantes, or vegetables whatſoeuer, wherewith the earth dooth ſeeme vnprofitable

char

charged.

Diuers alſo haue found ſingular profit in the hayre that is gotten from the hides of beaſtes being thinly laid vpon the ground, and ſuffered to putrify. Haire.

Now as we may by putrifaction of the ferne, and other plants, in diuerſe partes of this realme make the ſame very profitable vnto vs for ſuch country purpoſes as are here intended; ſo likewiſe by calcination of them, or burning them to aſhes, we ſhall find the like and ſelfe ſame effects; as diuerſe ſhires in Englnd can already teſtifie in their owne experience, who conſume their ferne, ſtubble, ſtrawe, heath, furres, ſedge, beane ſtalkes, and ſometimes the very ſworde, and ſwarth of the ground to aſhes: and theſe according to the ſtore of ſalt, which their aſhes containe, do either for a longer, or a ſhorter time enrich their barren grounds. Caltinatis of vegetables.

And becauſe that nature may be knowne to bee ſo cunning an artiſt, as that ſhe hath not made any thing in vaine, the witte of man hath alſo founde out ſome good vſe this way, euen of the duſte and tailes of the malt, which are left in malting, for theſe being alſo returned vppon the grounds from whence they came do helpe in ſome meaſure to harten them again. The proportion of them is about three quarters to an acre of ground, but this ſecret extendeth only to malting towns, and there alſo but to a few acres of ground, yet I thought good to inſert the ſame among the reſt, as a member of that body, which giueth vnto each ſubiect his generatiue, and fructifying vertue. Malte duſt.

I would greatly commende that fine and delicate mold, that is founde in the boddies of olde large and hollow willow tres, that are putrified within, if it were as plentifull to bee had, as it is rich in ſubſtance, yet The earth in willow trees.

hapily how ſmall ỹ ſtore thereof be, it ſhal not be loſt for the gathering, after the beſt vſes thereof be found out, & known among ỹ ſtudious practiſers of our age.

And here becauſe of al other places, I woulde bee loth to leaue the moſt renowmed citty of Englande, wherin I was borne, without ſome further & ſweeter helps for her barren groundes, then ſhee hath bin hitherto acquainted withal, and for that I daily do ſee, a moſt rich commodity trampled vnder foot, and contemned of al men, I hold my ſelfe euen bound in conſcience, for my countries good, not to hide the ſame any longer, but rather to publiſh al ſuch profitable vſes therof, as I conceiue my ſelf, or haue learned of others, togither with a ful ſatisfaction of thoſe obiections, which haue bin grounded vpon the long diſcontinuance therof with the Low country men of Flanders, who are generallie accounted the moſt skilful & painful husbandmen of al Europe. The matter which I mean, is the waſt ſope aſhes which our ſope boilers for the moſt part, wil giue for the cariage, and ſom of them alſo doo pay for the cariage when they are conueyed from their houſes: though ſome fewe of them make a ſmal beneſit of theſe aſhes. And here it ſhalbe no ſhame for vs to acknowledg thoſe Flemmings to be our firſt teachers, in the vſe of them: naye, it is rather a great ſhame, that wee cannot bee prouoked to our owne profit, by the example of others, who haue ſo many years enriched themſelues therby, and haue of late yeares, to their great loſſe, bin forced to leaue them. As concerning their good opinion, and profitable vſe of them, I think wee need no further argument to maintain it, then the price which they gaue for them to the ſope-boilers, which I haue credibly heard, was 3. s. or ten grotes a lode, beſides ỹ carriage of them into their own countrey. And

And yet if the infinite extenſion of them, the eaſie charge in beſtowing of them together with their eſpeciall nature, in ſuppreſſing of weedes, be wel weigh ed and conſidered, wee ſhall finde them to be much cheaper of that price then any common ſoile, or ſtable dung whatſoeuer. For howe cheap ſoeuer our other ſoile bee, yet the tranſpoſing thereof from place to place (if the land lie at any diſtance) doth make it ſo chargeable that the poorer ſorte of farmors in many places of this realme wil ſcarcely aford the cariage therof to their grounds, though they might haue the ſame freely giuen them; whereas two load of theſe aſhes or thereabouts being ſufficient for an acre of arable ground is ſoone beſtowed by the labor of one mā without the help either of cart or horſe. For their maner about Bridges was after they had ſowed the ſame with greine, to ſtrowe theſe aſhes thereon with their hands till the grounde did ſeeme to haue gathered a whitiſh garment vppon it, and that was ſufficient for that yeare, and by this practiſe they might ſowe the ground yearely without leauiug it fallow at any time; yea their ground being helped in this manner would yeald them a moſt rich crop of flax, whoſe ſeede of al other doth moſt burne, & pill the ground for ſo ſaith the Poet. *Vrit enim lini ſemen*. It is alſo with good probability to bee coniectured, that theſe ſope aſhes do not only enrich the ground, but do alſo help to deſtroy wormes, weedes, and ruſhes, that doe ſpring vp in moiſt and barren grounds; then let euery wiſe man imagine what may be ſaued thereby in that chargeable weeding of woad. *Qre* if brome or ferne may not be deſtroied by this meanes; and I make no doubt of brome, if the grounde were firſte plowed, and after theſe aſhes ſcattered vpon the ſame.

And becauſe I would not relie wholie vppon the outlandiſh experience of thoſe aſhes, (leaſt otherwiſe it might happilie be obiected that they are not agreeable with our ſoile or climate) I haue thought good to prefix in my demonſtratiue table, the portraiture of an eare of Summer barlie, beeing drawne truely and ſharpely, according to the breadth and length thereof; which together with ſundry others of the ſame proportion (as by diuers eie witneſſes of good credite, I can proue and iuſtifie) did grow this Summer at *Biſhops hall*, where I dwell; to the great admiration of the beholders: the ſtalke whereof together with the eare was meaſured to bee an ell, and three inches in length, from the ground to the ſummitie thereof. And this I did in a barren grounde, by the helpe and meanes of thoſe ſope aſhes, God bleſſing my labors therein.

I haue alſo this yeare, found the like ſucceſſe therof in paſture ground, by the meanes aforeſaid. *Qre*. If that ſope aſhes wil not enrich the ground for woad as that thereby wee may continue our yeerely ſowing vpon the ground, without any intermiſſion therof. *Qre*. Alſo, if the ſame be not very profitable to be laid amongeſt the hop hilles, to make the plantes to flouriſh and proſper the better. For in Lombardie, they like ſo well the vſe of aſhes, as that they eſteeme it much aboue any dung; thinking dung not meete to be vſed, for the vnholſomneſſe thereof. This out of maiſter *Barnabie Googe*, who dooth alſo affirme in another place of his booke of Husbandrie, that if we wil haue the Artichoke to proſper well, wee muſt dung the ſame continually with aſhes, for that kinde of fruit delighteth therein.

And to make the ſame out of all queſtion, I knowe

a graue and well experienced Cittizen of London, who hath made often triall of them, and hath founde very good ſucceſſe, by applying them in the Winter time, to the rootes of his owne Artichokes. Now if we will alſo looke into the reaſon hereof, we ſhal find it to be nothing elſe but the ſalt of theſe aſhes, which notwithſtanding al that ſharpe Lee, which the ſope-boilers haue drawne from them, do yet remain much ſtronger, and more ſaltiſh then our beſt aſhes, that haue not as yet beene put to any vſe; and this wil eaſilie appeare in ſome of thoſe other vſes, that followe hereafter. All which being well conſidered, I do hold the ſame better for winter then ſummer corne, and very profitable for al colde and moiſt paſture, & medow grounds, ſo as they be laide vppon them, about the feaſt of all Saintes, that the great ſhowers in the Winter time, may make them of an eaſie ſolution; whereby the graſſe may haue a more ſpeedy attraction of their vegetatiue ſalt vnto it.

Some be of opinion that theſe aſhes be made for the moſt part, of that tree which carrieth a ſmall leaf, like vnto our Oke, and whereof the Danſicke Wainſcot is made. And ſome others doo commend another tree, that ſomewhat reſembleth our Witchen Elmes, of whoſe boughes and branches, beeing burned, they gather theſe aſhes. But it is moſt certaine that they are not the aſhes of any one tree, but of diuers that are conſumed together, as they growe in ſome great wood. Nowe theſe aſhes by a more violent kind of fire, beeing forced to a fuſion, whereby they cake and clode together, are then called by the name of ſopeaſhes. But howe then commeth it to paſſe, if there be ſuch ſalt and ſtrength, remaining in theſe waſte aſhes, that our Fleminges (who wil not

loſe ſo much as the parings of their nayles, much les the vſe of ſo rich a commodity) ſhould wholy abandon them, and for ſo many yeares togeather diſcontinew all their traffike and barganing with our ſope boilers? It ſhould ſeeme by all likelyhood that though for a few of the firſt yeares they found ſome hartning therby vnto the ſoile and ground whereon they were beſtowed, yet in proceſſe of yeares that theſe aſhes being yearely renewed vpon the ſame land, did in the ende leaue ſome hard and barren cruſt, or *caput mortuum* behinde them, whereby the ground becam either for a long time, or wholy vnprofitale euer after.

Theſe obiections being throughly anſwered, and confuted, I hope I ſhall finde an eaſy ſute of it to entreat all our London borderers, who doe occupy themſelues in the affaires of husbandry, to ſtep into the dutch mens romes, and to neglecte no longer ſo rich and ſo bountifull an offer. Neither yet will I here relie vppon thoſe late troubles, and turmoiles of the low countries, which hath beene a meanes both to cut off a great parte of the entercourſe betwene them and vs, and to make them almoſte vnwilling to performe any proffitable practiſe for their owne good leaſt the enemy ſhould like a drone Bee deuoure their hony, nor yet vpon any newe exaction that hath ben demanded of them vppon the tranſporting thereof, whereas in times paſt they did cary them freely away for balliſt, but I will only at this time vrge that countermanding priuiledge firſte granted vpon a color or pretence to haue imploied them very profitablely vpon the making of ſalte peeter, and brimſtone within this realme, whereby al the ſope boilers were prohibited from the ſale of them to any ſuch as would tranſport thē, although the patentees could neuer as yet

with

with all their chimicall skill, draw out or ſeperate one pound of peter, or brimſtone from them. And for my parte I am vndoubtedly perſwaded that their firſt purpoſe was no other (howſoeuer the ſame was masked, or diſguiſed in ſhew) but only to force the ſope-boilers (after they had procured a generall reſtrainte) to growe to compoſition with them for ſetting them at large again, which appeared moſt manifeſtly to be ſo, for that in yend they demanded a certaine rate vpon the tun, which they denied, and therupon the firſt diſcontinuance of them grewe betwixt the flemings and the Sope boilers. And thus I hope I haue remoued this ſtumbling blocke out of my countrimens way whereby they may beginne a freſhe practiſe of them, and thereby make ſome vſe of that patent, which hath by this time gotten a ſownd ſleepe, and is now awaked in a good houre.

And as concerning any bad accidente that they ſhould in time leaue behinde them; their melting and ſoluble nature, whereby in one yeares ſpace they are wholy conſumed with thoſe ſhowers, and froſts that ouer take them, is a ſufficient argument to conuince all doubtes that can poſſibly bee obiected this way. But now to ſome other vſes of them: I do find them much better and cheaper then the maſons duſt for the ſcowring of our trenchers, and other wodden veſſels, and this can our duche liskins, and kitchin maides well approue, whoſe dreſſors, ſhelues, and molding bordes are muche whiter and cleaner keept, then thoſe which are waſhed, and ſcalded after the engliſh manner; vppon which reaſon they muſt of neceſſity be very ſeruiceable for waſhing of al our wodden floores either of deale, or elme to clenſe them of all their greaſe, ſpots, or ſoile whatſoeuer

and

and I make no queſtion but that we ſhall finde them very excellent for the ſcowring, and clenſing of our glaſſe windowes from all the ſteines, filth, and clowdineſſe, that maketh them in time ſo darkſome vnto vs. I will paſſe ouer the vſe of them in the pauing of the ſtreetes, and laying of bowling allies, wherin alſo many hundred loades are yearely conſumed in London, and the ſuburbs rounde about it. But I may not omitte that excellent and ingenious practiſe, of that skilfull and auncient ſopeboyler, who looking aduiſedly into their binding and knitting nature, hath to his greate credit erected a faire, a ſtrong and coſtly building of bricke, in the morter whereof, he beſtowed good ſtore of his owne ſopeaſhes, which to this day contineweth firme, and ſolid, and without any ſhew of ill accident (hapining by theſe aſhes) as any other building, whoſe ſtones were laide only with lime, and ſand. By whoſe good example many other alſo of latter times haue occupied many hũdredloads of them for the ſame purpoſe, & would haueſpent many thouſand loades of them ere this day, but that they finde this morter ſomewhat rough in the laying, and more ſharpe, and fretfull to their fingers then their vſuall morter which they daily occupy. But if I were able to be a builder my ſelfe, I woulde ſoone remedy theſe two ſlender falts, whereof the latter I holde rather for an excellent quality, and moſt appropriate for the nature of morter it ſelfe, rather then a falte. And yet for the good will which I beare vnto all the excellent vniforme builders of our time, and becauſe thereby I ſhall giue ſome encreaſe of labour to the poore, and painefull people, that may bee employed therin; I will ſet downe the beſte aduiſe, that I can in this behalfe, the ſame being ſuch as I dare make warrant

warrantiſe thereof vppon my credit, being carefully handled. As concerning the roughnes of them, who is ſo blind that ſeeth not which way to remedy ỹ ſam, for it is rather a worke of labor then of skill? For they being either groũd or ſtamped into a fine powder, before they be mixed with the ſand, wil ſoon be brought into a ſmooth temper.

And here wee haue no neede to feare the charge that will ariſe thereby, for I dare vndertake that the profit of one daies labour, will anſwere the charge of three mens wages, in the difference of price that will be found betweene one loade of theſe aſhes, and one hundred of lime. The ſharpnes wherwith they offend the Bricklaiers fingers may in ſome ſort bee auoided by wearing of gloues (without the which, they ſeldome lay any bricke at all) to auoide the like effects, which they finde in lyme. But for an aſſured helpe therein (if the ſame be ſuch as cannot bee endured of workemen) let theſe waſt aſhes bee reimbibed with more water for ſome reſonable time, till ſome farther part or proportion of their ſalt be deuided from them and then without all queſtion they ſhall finde them gentle enough, and much of their fretting nature taken from them. See the whole arte of making of the morter ſet downe in the former book of experiments *nu.* 92. The laſte, though not the leaſt vſe of theſe aſhes, which I purpoſe to diſcouer at this time, is to make them ſeruiceable in ſteade of common aſhes, both for the whiting of linnen, as alſo for the making of buck lee, which are nowe growne to an exceſſiue price, partly by the greate expence of them in ſalt peter works: but principally through our late ſparing of wood, and charcoale, whereby theſe latter times doe not afford the like ſtore, or plenty of them as we were

For buck cloathes.

accuſtomed to haue in the daies of our predeceſſors. And I am ẏ rather induced to conceaue well of them in this courſe, by that auncient, and common experience, which the whitſters, and dutch laundreſſes haue long ſince begun, and doe as yet continew amongeſt vs, for the ſpeedier whiting of yarne with them, which they do moſt confidently affirme to become more white by this meanes by once bucking of it, then by ſundry times with our common and ordinary aſhes, and if they ſhalbe found ouer ſtrong, & ſharpe for our linnen (which is the only falte that I could euer here them charged withall) I doubte not but that by the aforeſaid manner of imbibition, they may be ſo weakned, as they ſhall eaſily be reduced to the perfect ſtrength of our ordenary aſhes: or elſe for our better ſatisfaction herein wee may vſe ſuch proportion of our aſhes amongſt them, as may beſt bring them to bee of one nature and qualitie with them. Thus much by way of digreſſion of the ſeuerall vſes of theſe waſt aſhes, wherein though I haue ſtrayed a little without the bondes, and limits of husbandry yet I hope I ſhalbe found ſufficiently within my text, for that all theſe particular vſes may ſeeme to maintaine and fortifie their fructifying nature the more, becauſe they are wholly drawn from that vegetatiue ſalt, wher with the ſame aboue all other ordinary dung whatſoeuer is moſt fruitfull, and abounding.

Salt of Animals

Salt of Minerals.

Thus much of vegetables, nowe a touch of Animals, and ſo I will knit vp this diſcourſe, leauing thoſe ineſtimable and hidden treaſures of the minerals and their ſalts, tending alſo this way vnto the deeepe Lulliſts, and trew engliſh Paracelſians, who no doubt if they liued in thankfeull times, woulde begin where I haue left, and not only haue publiſhed their philoſophical

phicall ſalt, which nature ſhoulde haue beene forced to maintaine for euer, but wouldalſo haue laide open a verie large veine of golden Marle, whereby they woulde haue ſo multiplied that radicall moiſture of ſundry plantes, as that in ſome good meaſure they ſhould haue recouered that firſt perfection, wherein they were created, and which they loſt by the fal and diſobedience of man. I am crediblie enformed (and the reaſon thereof is ſo apparant, as that none but he which will deny the concluſion of a Syllogiſme can denie the ſame) that after ſuch time as the coaſt-men haue by expreſſion, and other apt means, gotten that kind of traine oyle, which they call a pilchard oyle, from the fiſh of that name, that they doo alſo beſtow that which remaineth of the pilchardes vppon their leane and hungry grounds, the ſubſtance wherof, by putrifaction, dooth in time become a moſt rich and fruitfull molde, and ſuch as giueth hart vnto ỹ earth, for many yeares together.

Pilchards putrified.

And it is no way to be doubted, but that the carcaſes and garbage of al other fiſh, would produce the like effects, for that they muſt of force reſemble the nature of the place wherin they breed and liue: wherof we ſhould haue had a ſufficient triall ear this, but that there is no ſuch ſtore of any other fiſhe ſo fitlie preſented vnto vs for this purpoſe, as the pilcharde, which ſerueth to no other vſe, after ſeparation made of the oile, but only to engender this ſalt dung, which we haue in hand.

Garbage of fiſh.

Now concerning the bloud, offal, and entrailes of beaſts, euery Butcher about London, who for the moſt part, hath a garden for that purpoſe, to burie the ſame in, to auoid offence, can ſufficiently teſtifie. And I haue heard the bloud of beaſts commended in

Bloud, offal & entrailes of beaſtes.

high

high tearmes, for the forwarding and proſpering of all poore and backward vines, ſo as withall it be tempered with lime, which is vſed to no other ende, but onely to deſtroy all ſuch wormes, as otherwiſe the bloud would engender in the earth, which would in time conſume all the ſap and marrowe, that lyeth in the rootes, and in the end deſtroy both the root and the vine. Yet this caution I will giue before I conclude: that he which tempereth lime with ỹ bloud, muſt ſuffer the firſt accidentall heate, which happeneth in the ſlaking thereof, to paſſe ouer, before hee apply the ſame to the root, either of the vine, or of any other plant, leaſt that vnkindly and vnnatural heat, (which for the time is ſtirred vp in the compoſition) do happen to burne and drie vppe, that radicall moyſture, which will hardly be reſtored againe, by any outwarde Art or meanes whatſoeuer.

Claudite iam riuos pueri, ſat prata biberunt.

Here endeth the booke
of Husbandry.

Diuers Chimicall *Conclusions concerning* the Art of Distillation.

With many rare practises *and vses thereof, according* to the Authors own experience.

Faithfully and familiarly set *downe by H. Plat of Lin-*colnes Inne Gent.

LONDON
Printed by Peter Short.

1594.

Diuerſe chimicall concluſions con- 3
cerning the Art of Diſtillation.

The maner of drawing, or extracting of the oiles out of hearbes, or ſpices with all neceſſarie circumſtances.

1  Copper body, or braſſe pot, with a pewter Limbecke, and a glaſſe receyuer, are all the neceſſarie Inſtruments for the extracting of theſe oiles, and the greater the potte, or bodie is, and the more you diſtil at once, you ſhal make both the leſſe waſte, and the oyles will be in leſſe daunger of aduſtion.

2 Let the middle pipe of your Limbecke, through which your oyle and water aſcendeth, be as large againe as the ordinarie pipes are, and much ſhorter, and let the bucket, or cooler in the head containe as much more colde water, as our ordinarie Limbecks doe.

3 If you haue cauſe to draw much oyle at once of one ſorte or kinde, then vſe the firſt water againe for the *vehiculum* in your ſecond drawing, becauſe the ſame hath alreadie receyued his glutte of the oyles, and will not be ſo hungrie to deuoure your oile as new, and freſh water, that hath not beene vſed to the ſame purpoſe before.

4 The water in the cooler may not boile, but you muſt change the ſame ſo often as it groweth ſcalding hot, and put cold water in the place thereof.

5 You may begin your diſtillation with a prettie ſtrong fire till the oyle beginneth to aſcend, but after-

ward let your fire bee ſo temperate, as that your pipe that runneth into the receauer doe neuer blowe, but only drop apace, or run trickling down the receiuer.

6 Some vſe to macerate, or infuſe theſe ſpices the night before they diſtill, luting the Limbeck, to their braſſe pot, or copper body, the beſt vſe thereof is in my conceipt that the paſt, or lute wilbe ſo much the drier befor they begin to worke, but I thinke they gaine not any more oile by that practiſe. And yet a Neopolitan promiſeth to double the oile of Anniſſeeds, by macerating them ten daies before diſtillation.

7 The flowers of ſage, thime, roſemary, laueder, &c. yeeld more oile then the leaues, and the ſeedes more then the flowers.

8 To euery pound of ſeeds, or ſpice, adde a gallon of faire water at the leaſt.

9 Beate your ſeedes and ſpice ſomewhat groſely before you put them into your pot, or body.

10 All ſuch hearbs whereof you meane to draw any oile, would be laide abroad in the aire to drye, fiue or ſixe daies before you draw any oile from them: for ſo you may diſtill both more at once, and alſo you ſhal haue more ſtore of oile.

11 Thoſe herbs which are hot either in ſmell or taſt, wil giue their oile in this manner in more plenty then thoſe which are of a mild, or gentle ſmell, or taſte: as the ſweete marierom, roſe, &c.

12 Moſte of your oiles will fleete on the top of your water, yet the oile of cinamon and cloues will fall to the bottom, in the manner of a *Balſamum*, and ſome do hold it for one trew marke of a naturall *Balſamum*, if being powred into another oile, it ſincke to the bottome.

13 Your

13 Your paſte muſte conſiſt of beane flower, or other courſe flower, tempered with water only, or ſome whites of eggs well beaten, and during your diſtillation you muſt haue ſome paſte ready to ſtop all ſuch breathing places in the ioint, whereat any wind ſhall iſſue.

14. Let your receiuer being of Heſſon glaſſe containe two gallons, or three pottels, and for your receiuers you may choſe thoſe glaſſes which they call bodies, when they are once cut off with hot irons & fitted to their helmes.

15 For the moſt parte you ſhall haue all the oiles of your hearbs, or ſpices to aſcend with the firſte pottle of water, neuertheleſſe for the more ſuerty you may draw of a gallon, and proue what you can gather out of the laſt pottle.

16 You may diuide your oiles from your water, by putting the water, and oiles being temperately warm either into a large head that hath a ſhorte pipe, or for want thereof, into a greate glaſſe fonnell, ſtaying your finger at the bottome of the pipe till all the oile do flote aboue the water (except in cloues, and cinamon) and then letting the water to haue a gentle paſſage by lifting vp your finger a little, vntill you ſee the oile ready to runne out with the reſt, which you ſhall eaſily perceaue by the difference of their colors, and then ſtop the hole with your finger againe, and receaue the oile into a ſeuerall glaſſe by it ſelfe.

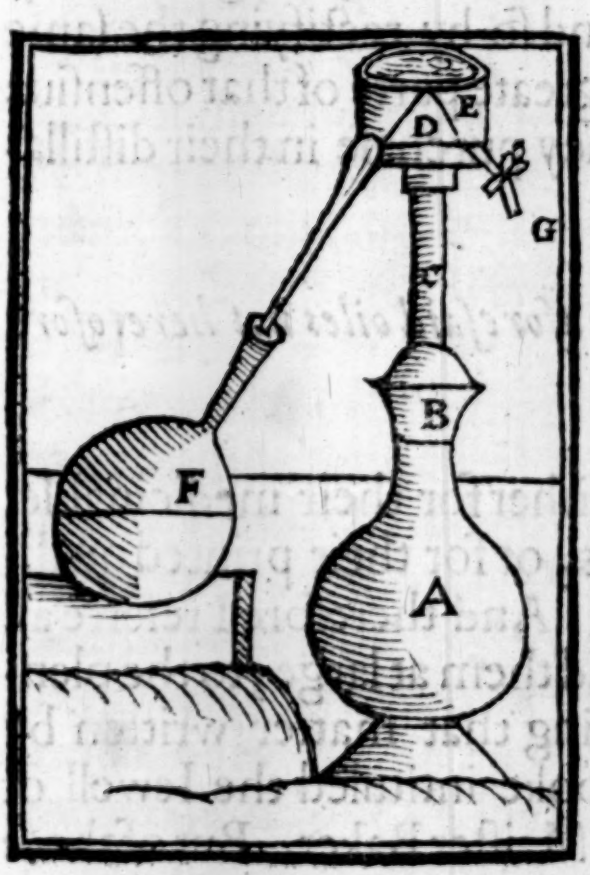
17 When you haue diuided the oyles from the waters, then may you rectifie, or purifie them in this manner. Put all your oyle that is of one ſorte into a glaſſe body, and holde the ſame carefully in ſome hotte water mouing the ſame

vp and down at the firſt, leaſt you breake your glaſſe, vntill all the water be euaporated, and that you perceyue the oyles to become of a cleare and tranſparent colour, and then keepe them in apt Glaſſes. Moſt of all theſe Oyles will laſt exceeding long, and to ſay trulie, I knowe not howe long, for I haue not found anie of them to faile, or looſe their grace, except the Oyle of Annys ſeedes. But ſome in ſteade of clarifying in the manner aforeſayd, doe vſe to rediſtill the ſame againe in ſmall bodies, and heades of Glaſſe with ſome of the firſt water, and ſome drawe them from Roſe water. Note that in this rectifying by aſcenſion you ſhall looſe a great part of their tincture, and if I bee not deceyued, a greate parte alſo of their ſtrength and vertue.

18 If you haue cauſe to drawe manie Oyles one after another, hauing but one Limbecke for them all, let the Oile of Annys ſeedes bee one of the laſt which you drawe, becauſe it will ſeaſon the Limbecke ſo ſtrongly, that you ſhall hardly get out the ſent but with great labour. And for the ſweetning of your Limbecke vppon euerie chaunge of ſtrong Oyle, you maie ſet the Limbecke looſe vppon the pot of water, or Copper bodie, and ſo vrge vp with fire a great quantitie of water out of your pot, till you find the ſent of the laſt oyle to vaniſhe: or elſe put ſome drie Roſe leaues, or ſweete Marierom leaues into your water, and then make fire, as before.

19 Let the paſſage of your water that ſtandeth ſtill in the cooler, bee verie large, whether it bee by cocke, or Tampion. Some doe emptie their cooler with a long crooked pipe, and ſet the ſame on running by drawing the water downe with their breath

breath a little at the firſt. It is verie requiſite to haue veſſels of colde water readie at hand to poure in preſently vppon the emptying of your cooler, or bucket, and if the ſame veſſels be of equall content with the bucket, you ſhall finde your labour the eaſier. I knowe ſome that to auoide the continuall labour of filling, and emptying of their cooler haue placed a large veſſell full of colde water in ſuch manner as that the ſame by turning of a cocke may runne dropping continuallie into the cooler: and in like manner the cocke that is fixed to the cooler may deliuer as much water into an other veſſell as it receyued from the vppermoſt.



20 Some holde opinion that the beſt drawing of all vegetable Oyles, that will congeale in cold weather, is in the Summer, or Springtime, but a woorkeman will both drawe them, and diuide thē at all times of the yeare.

21 Let there bee alwayes one thirde of your potte, or copper bodie emptie, that there may bee ſufficient roome for the ſpirits to play in.

Howe

How to rectifie the aforesaid oyles.

WHen you haue gathered some store of oyle together, put the same into a small glasse body, or cucurbite, setting the same in a gentle balneo til al the water bee euaporated from the oile, and that the oile become of a most cleere and bright color. This manner of rectifying is vsed in the extracted oiles of spices, seedes, and flowers. But if you woulde rectifie either oile of amber, iet, waxe, or any of those heauy, and fatty oiles which muste bee vrged vppe with a strong fire, then your beste way is to poure the oile vpon a good quantity of rose water, in a glasse body luting a helme vnto it, and so by rectifying the same often from rose water, a greate parte of that offensiue and adust smell which they purchase in their distillation, will be taken away.

Diuerse speciall vses of the aforesaid oiles not heretofore published.

TO commend them either for their medicinable, and knowne vertues, or for their printed qualities were but loste labor. And therefore I referre all such as be desirous to read them at large, to the plentifull discourse concerning that matter written by doctor *Gesnerus*, in a booke intituled the Iewell of health, and englished by Maister Baker. But of those other more rare, and conceipted vses, which either I haue founde out by mine owne experience, or learned of others; I will here giue some taste vnto all the true louers of learning. And those

who

who are desirous to make a triall of these practizes may repaire to Maister Kemish, that auncient and expert Chimist dwelling neere the glashouse, at whose handes they may buy any of the aforesaid oiles in a most reasonable manner.

1. Diuerse sorts of sweete, or hand waters made sodainely, or extempore *with the saide oiles.*

FIrste you shall vnderstande that whensoeuer you draw any of the aforesaid oiles of cinamon, cloues, mace, nutmegs, or such like, that you shall haue also a pottle, or a gallon, more or lesse, according to the quantitie which you drawe, of excellent sweete washing water for your table, yea some do keepe the same for their broths wherein otherwise they should vse some of the same kinde of spice; but if you take three, or foure droppes only of the oile of cloues, mace, or nutmegs, (for cinamon oyle is too costly to spend this way) and mingle the same with a pint of faire water, making agitation of them together a prety while, in a glasse hauing a narrowe mouth, till they haue in some measure incorporated themselues together: you shal finde a very pleasing and delightfull water thereof to washe with, and so you may alwaies furnish your selfe of sweete water of seuerall kindes, before such time as your gests shalbe ready to sit downe. I speake not here of the oile of spike which will extende very farre this way, both because euery man liketh not so strong a sent, and for that the same is elsewhere already commended by an other Author. Yet this I must needs acknowledge to be the cheaper way, for that I assure my selfe there may be fiue, or sixe gallons of sweet water made with

one ounce of the oile which you may buy ordinarily for a groat at the moſt.

This way you may alſo make an excellent ſweete water for a caſting bottle. Take three drams of oile of ſpike .1 dram of oile of Thime. 1 dram of oile of Lemons. 1 dram of oile of Cloues; then take 1 graine of Ciuet, and 3 graines of the aforeſaid compoſition wel wrought togeather. Temper them well in a ſiluer ſpoone with your finger, then put the ſame into a ſiluer boule, waſhing it out by little, and little, into the boule with a little roſe water at once, till all the oyle be waſhed out of the ſpoone into the boule, and then do the like by waſhing the ſame out of the boule with a little roſe water at once til all the ſent be gotten out, putting the roſe water ſtill in a glaſſe when you haue tempered the ſame in the boule ſufficiently. A pint of roſe water will be ſufficient to mingle with the ſaid proportion, and if you finde the ſame not ſtrong enough of the ciuet, thē you may to euery pint put. 1 grain, and an halfe, or 2 grains of ciuet, to the weight of 3 graines of the aforeſaid compoſition of oiles. If you diſtil bruſed cloues with faire water only, in an ordinary leaden ſtill, you ſhall receiue very good waſhing water for your table, and the charge thereof will not exceed 3 pence, or 4 pence the pint. All theſe ſeueral ſweete waters I haue often prooued.

2 *How to make ſundry ſorts of moſt dainty butter with the ſaide oiles.*

IN the moneth of May it is very vſuall with vs to eat ſome of the ſmalleſt, and youngeſt ſage leaues with butter in a morning, and I thinke the common vſe thereof doth ſufficiently commende the ſame to be whol-

wholſome, in ſteade whereof all thoſe which delighte in this hearbe may cauſe a few droppes of the oile of ſage to be well wrought, or tempered with the butter when it is new taken out of the cherne, vntil they find the ſame ſtrong enough in taſte to their owne liking; and this way I accoumpt much more wholeſome then the firſt, wherin you ſhall finde a far more liuely and penetratiue taſt then can be preſently had out of the greene herbe.

This laſte Sommer I did entertaine diuers of my frends with this kinde of butter amongſt other country diſhes, as alſo with cinnamon, mace, and cloue butter (which are all made in one ſelfe ſame manner) and I knew not whether I did more pleaſe them with this new found diſh, or offend them by denying the ſecret vnto them, who thought it very ſtrange to find the naturall taſt of herbs, and ſpices cõueied into butter without any apparant touch of color. But I hope I haue at this time ſatisfied their longings. *Qre*, if by ſom meanes or other you may not giue a tincture to your creame before you chearne it, either with roſeleaues, cowſlep leaues, violet or marigold leaues, &c. and thereby chaunge the color of your butter. And it may be if you waſh your butter throughly wel with roſe water before you diſh it, and worke vp ſome fine ſugar in it, that the Country people will go neere to robbe all Cocknies of their breakfaſts, vnleſſe the dairie be well looked vnto. If you woulde keepe butter ſweete, and freſh a long time to make ſops, broth or cawdell, or to butter any kinde of fiſhe withall in a better ſorte then I haue ſeene in the beſte houſes where I haue come, then diſſolue your butter in a cleane glaſed, or ſiluer veſſell & in a pan, or kettle of water with a ſlow and gentle fire, and powre the ſame

ſo diſſolued, into a baſon that hath ſome faire Water therein, and when it is cold, take away the foote, not ſuffering any of the curds, or whey to remaine in the bottome: and if you regard not the charge thereof, you may either the firſt or ſecond time, diſſolue your Butter in Roſewater as before, working them wel together, and ſo Clarifie it, and this butter ſo clarified, wil bee as ſweete in taſt, as the Marrow of any beaſt, by reaſon of the great impuritie that is remooued in this manner of handeling: for I thinke that if you clarifie it thrughly wel, you ſhal find either a fourth, or fift part of droſſe, in the beſt butter that you can buy in the market, which I thinke to be more fit for the dunghill, then for a mans ſtomach, onely it helpeth the butter wiues to make ſom waight: as thogh (ſimple wenches) they knew not which way to helpe themſelues in their ſmall diſhes. *Qre.* What butter the creame of Goates milke would make, becauſe the milke is exceeding ſweet, and nouriſhing. You may eaſily knowe what countrey man I am, by following this London text ſo farre as I doo: neuertheleſſe, let me teach one thing more, to them which knowe it not already, and ſo I will conclude with butter. That in Winter time, it is very requiſit to ſcalde your milk preſently as it commeth from the Cow, before you put it into your pannes, but take heed it ſeeth not; and you ſhall haue very good butter, curdes and cheeſe, when others ſhal want the ſame. And thus I hope, I haue giuen ſome content to thoſe Gentlewomen, which do not thinke themſelues too olde, or too wiſe to learne: and if there be any that can ſay more in the circumſtances of butter, I hope their dairies be greater than mine, that neuer kept but twoe kine, in any one Summer.

3. *To make any cheeſe to taſt of your aforeſaid oiles.*

AS before in butter, ſo likewiſe if you mingle any of the aforeſaid oiles in your curdes, before you preſſe out the whey, you ſhall feele the ſame very ſenſiblie and pleaſantly, in the taſt of your cheeſe, in the which you may eaſily mingle ſom roſe leaues, or giue them the taſt, ſmell and colour of any flower at your pleaſure. There is alſo a tricke in the making of a cheeſe, without putting the ſame into any preſſe, onlie by giuing the ſame a gentle peize, whereby ẏ whey that runneth from the curdes, wil bee as thin as water, and carry no ſubſtance with it, and ſo your cheeſe wil bee much bigger, and better than otherwiſe it would be, being made after the common country faſhion. I haue beene as bold as *I* dare, in diſcouerie hereof, becauſe I would be loath to offend a Gentlewoman that preſumeth of a great ſecret herein, and ſhe is the more daintie of her skil, becauſe ſhee hath found it out by many labors, and loſſes of her owne. But *I* thinke I haue giuen light ſufficient to a good dairie Woman to find out al the circumſtances therof in time.

4. *Wholeſome and comfortable* Manus Chriſti, *for ſuch as haue weake ſtomaches.*

DIſſolue ſome of the whiteſt Barbary ſuger you can get, with a little roſewater in a ſmall ſhallowe pipkin, that cõtaineth 3. or 4. ounces & glaſed within, and hauing a ſinal lip, boile the ſame vpon a ſoft fire, vnto a ſtifneſſe, or conſiſtency (as they terme it) till a

drop thereof being powred out of the lip vpon a cold ſtone, become hard, and not clammy when it is cold. And when you haue your ſugar boiled to this heigth, then hauing a cleane Marble ſtone, firſt ſprinkeled ouer with fine flower, poure the ſame out by peece-meale, making each of them of the bignes of a groat or teſtor, or thereabouts, and when they are thorow cold, hauing a few droppes of the oyle of Cynamon, Cloues, mace, nutmegs, &c. in a ſiluer ſpoone, with a ſmall feather, giue each of the *Manus Chriſti* a tuch onely with a little oyle, on the tippe of the feather, and ſo you may prepare a great many together of them with ſuch oyles as the phyſician ſhal giue direction, and in the eating of them, you ſhall finde them to warme and comfort your ſtomach exceedingly. Some do put in their oyles in the boyling of the Sirrop, but I holde the firſt to be the better way, both becauſe you may make of ſeuerall ſorts at once, as alſo for that theſe oyles being ouer heated do loſe a great part of their grace in taſt.

5. *Diuers excellent kindes of bottle Ale to be made with the aforeſaid oyles.*

I Cannot remember that euer I did drinke the like ſage ale at any time, as that which is made by mingling two or three droppes of good oyle of ſage, with a quart of Ale, the ſame beeing well brewed out of one pot into another. And this waie a whole ſtande of ſage Ale is ſpeedily made. The like is to be done with the oyle of mace, or nutmegs. But if you will make a right Goſſips Cuppe that ſhall farre exceede all the Ale, that euer mother Bunch made in her life time, then in the bottleling vppe of your beſt Ale

tun

tunne halfe a pinte of white ypocraſſe, that is newlie made, after the beſt receipt, and with good ſpice, with a pottle of ale; ſtoppe your bottle cloſe, and drinke it when it is ſtale. I feare ſome Alewiues, if they had knowne this receipt, priuatly to themſelues wold haue hung out holly buſhes at their red lettiſes and ſo they might haue beene miſtaken for Tauerns, of many Ale knights. Some commend the hanging of a roſted Orenge prickt full of Cloues, in the veſſell of Ale, till you find the taſt thereof ſufficiently mended to your owne liking.

6. *Wormewood wine made very ſpeedily, and in great quantitie.*

TAke ſmall Rochell, or Conniacke wine, put a few drops of the extracted oyle of wormewood therin, brew it (as before is ſet downe in bottle ale) out of one pot into another, and you ſhall haue a more neat and wholſome wine for your bodie, then that Wine which is ſold at the Stillyard for right Wormewood wine. And as for their Rheniſh wine, I haue heard them ſpeake it, whom I dare beleeue, that how many fatts ſoeuer be found at once in ſome of their cellers, there is none worth the taſting, but that onelie which is abroach, and this is a prettie ſleight to deceaue the Purueyor. It may be ẏ the reſt of the fats, haue not yet receiued either the brimſtone match, or the compound ſent which they poure in with it, or the herbe *Gallitricum*, which I haue heard greatly commended ẏ way, but how ſo euer they ſophiſticate this wine, I am verily perſwaded, by that little acquaintãce which I haue had with the grapie God, that for the moſte part, theſe Dutch Brewers, buy no other Wines but

Rochel

Rochel, or Coniack, after 14. or 16. pounds the tun, and with some fiue or six shillings charge vpon a fat, they draw it againe for Rhenish wine, after 32. li. the tun. I will not touch here the selling of new perry in stead of Rhenish wine in the muste, or both together in equall proportion, because I feare I haue alreadie vexed the vintners, who find more profit in their secret mixtures, then pleasure in these open discoueries.

7 *How to sweeten the oyle of Almonds with the afore said oiles, so as the same may serue the perfumer in stead of the oile of Benn, which is made of the Italian nuts.*

CHoose the newest, and sweetest Almondes, that you can get (you shal know them by their reddish colours, and I hold the Barbary Almond, far better than the Iordan almond for this purpose) expresse their oile according to the manner hereafter set down, without warming either the Almondes, or the brasen box wherein you put them, least they become ranke in a short time; after you haue drawne some quantitie heereof, let it settle foure or fiue daies, till all the *Fæces* or grounds fall to the bottome; then by declination poure away the cleerest, and take a little thereof, and mingle a few drops of the oyle of cloues therwith, stirring them wel together in an apt glasse, then poure more of the oile of Almonds thereto, working as before, incorporating so much of the oile of cloues therewith, till the sent thereof like you. With this oyle thus prepared, the Perfumer may temper his muske, Ciuette, or Amber greece, as he dooth with his oile of Ben, which serueth for no other purpose,

but

but onely to conuey ſuch ſents, and perfumes into the leather as hee hath wrought together for the ſelfe ſame purpoſe, being it ſelfe of no ſent at all. This I write not vpon bare imagination, but vppon ſome proofe which I haue ſeene made with the ſimple oile of Almonds in gloues of no ſmall price. Although I know this oile to be greatly doubted of by the perfumers, becauſe in a few moneths it will grow ſomewhat rancke, whereas the falt is in the olde Almonds which the Apothecaries doe chieflie chooſe becauſe they are more oily then thoſe which are newe, and freſh.

And here if a man were diſpoſed (*Seria miſcere iocis*) were a fitte opportunity to diſcourſe of a philoſophicall contrition of oiles, thereby to defende them from putrifaction. Alſo if you labour, and beate well together ſome freſh oile of Almonds with chaunge of roſe water, it wil ſerue inſtead of a ſweet ointment, or *Pomatum*, to annoint your hands with. So likewiſe of the oyle of cloues, tempered with the oyle of Almonds to rubbe a new gloue in the inſide to giue it a ſweete ſent in the wearing. Here I could commend the oile of beech-maſt, if it were in yealde according to the report of a Neopolitane writer: for that which is expreſſed from the nut I know to be a moſte ſweete and delicate oile.

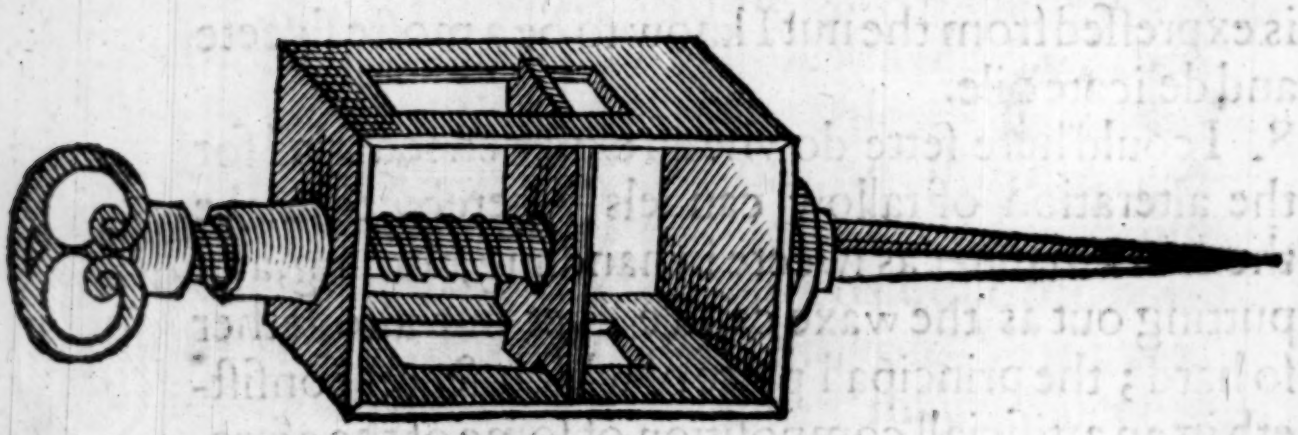
8. I could here ſette downe an experienced triall for the alteration of tallow candels whereby to make them in a manner as ſweete in handling, burning, and putting out as the waxe candle, yet not altogether ſo hard; the principall parte of which ſecret conſiſteth in an artificiall compoſition of ſome of the aforeſaide oiles. But I muſte reſerue the ſame till my ſecond edition which I will haſten according as I finde

a thankeful acceptance of the firſt.

How to draw oyle of Waxe, Amber, Iet, Turpentine, &c.

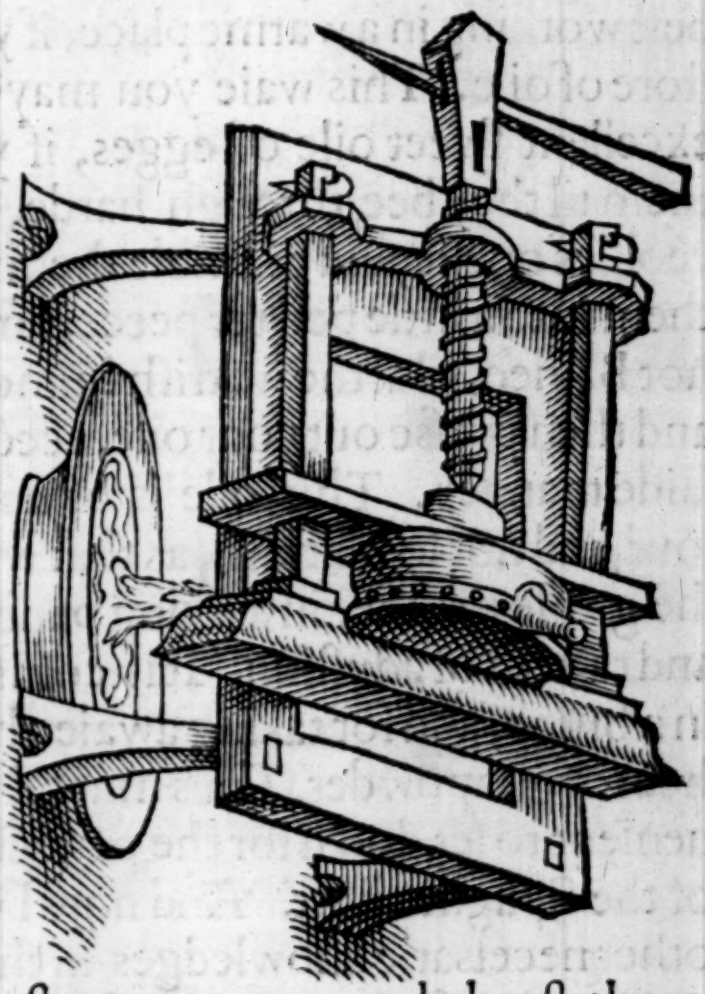
I Haue here aduiſedly omitted to ſet downe at large, the drawing of the oile of Wax, Amber, Iett, Turpentine, &c. becauſe moſte of them are offenſiue in ſmell. Yet let this in a word or two ſuffice, that all of them (except the oile of Turpentine) are to be drawn in ſand, and moſt aptly by waie of retort, which ſome doo alſo vſe to lute ouer, with lome and flockes well tempered togither: and becauſe thoſe vnctuous and ſwelling bodies ſhal not riſe vp into the helme, they vſe to ſuppreſſe them, by the addition of cleane waſhed ſand, powder of glaſſe, tileſtones, and ſuch like. And as for the oile of Turpentine, it wil riſe by a gentle Balneo, in a cucurbite of glaſſe or ſtone, hauing a helme of glaſſe luted thereunto. *Qre.* If it wil not riſe from water out of a braſſe pot, according to the maner of the oiles of hearbs and ſpices, before ſet down.

Of expreſſed Oyles.



Of

OF all the aforeſaid ſeedes and ſpices, as there may be an oyle drawne by aſcention, ſo likewiſe there may be an oyle had by expreſſion, yea many ſimples will yeeld their oile by expreſsion, which will yeelde none at al by aſcention, but as you ſhall haue much more quantity of oile this waie, either from the nutmegs, cloue, mace, &c; ſo the ſame is much groſer then the other, & more fit for outward applications then inwarde medicines, neuertheleſſe, they carie a ſtrong & ful ſent of the aromaticall body, from whence they are drawn, and haue alſo their eſpeciall vſes. The manner wherof is this. Beat your ſpice or ſeeds,



throughly well in a ſtone morter, and thruſt them cloſe into a peece of heare cloth, or French boulter, (which before hād you muſt place in your mettaline box, that hath a little loſe iron grate in the bottome) then lappe vp the heare cloth, laying the weight vpon it, which preſſeth downe the ſpice, and ſhutteth cloſe into the box. Then put this box with the couer, betweene the ſides of your vron preſſe, which you may laie ouerthwart a ioyned ſtool; placing ẏ noſe of your box, ſo as it may drop into a pewter peece, which of purpoſe you muſt place vnderneath the ſame, then

giue a turne now and then with an iron pinne to the ſcrew, til you ſee no more oile to iſsue, (ſome to gain the more oile, infuſe the ſpices in the oile of ſweet almonds firſt.) Note that your ſeedes and ſpices, and the box with the other implementes, muſt bee warmed, before you expreſse; and in colde weather, it is beſt working in a warme place, if you meane to haue ſtore of oile. This waie you may purchace a moſte excellent ſweet oile of egges, if you doo firſte roaſt them til they bee through harde, and then take the yeolkes onelie, and crumble them verie ſmal, putting them into a little pewter peece, and ſet the ſame in a hot Balneo, til al the watriſh humor bee enaporated, and then preſse out your oile, according to the afore ſaide manner. This oile is of a more beautiful colour, and not ſo blackiſh, as that which is made after the groſſe manner in a frying panne, which ſmelleth and taſteth of aduſtion. It is commended eſpeciallie in a burne, and for taking awaie the inflamation and heat of gunpowder. Thus much I haue thought conuenient to ſet down for the perfecting of this branch of the Spagirical art. And now I wil proceed to ſom other neceſsarie knowledges in the art of diſtillation, concerning ſuch matters as I am aſsured that euerie Gentlewoman that delighteth in Chimical practiſes wil be wiling to learne.

How to make Cynamon water.

THe beſt way is firſt in a braſſe pot with a pewter Limbeck, to diſtill from two or three gallons of ſacke, or muſcadell, ſo much ſpirit or *Aqua vitæ*, as will aſcend, then poure that ſpirite vpon as many gallons of faire water, putting to euery gallon of water

and

and ſpirit, a pound of choice Cynamon firſt bruſed, lute the ioynts of your pot and Lymbecke, as before in the extraction of the Aromaticall oyles, keeping the bucket in the head of the Limbecke colde, with change of water, and ſo draw as long as you finde any reaſonable taſt of the Cynamon. This of all the ordinarie waies is the beſt that I know. But if you infuſe your bruſed Cynamon, in ſpirit of wine onely, or in the ſpirit drawne from ſack lees, or ſtrong ale, vntill you haue gotten out by imbibition, all the tincture, taſt, and ſtrength of the Cynamon, which will be in ſeuen or eight daies, and then if you adde a new proportion of faire water, or rather of damaske roſe water vnto it, and ſo diſtill in a glaſſe body and head in Balneo, well luted in the ioynts, I thinke you wil find this the moſt profitable, and moſt artificiall way of all others. And leaſt you happen to be deceiued in the ſtrength of your Cynamon water, you muſt taſt euery ſticke of Cynamon by it ſelfe, before you buye it, yea and the ſame at eyther ende, or elſe you may happen to be deceiued. If when you haue drawne your Cynamon water, you like not to haue it of a thicke or cloudy colour, as commonly it falleth out in this maner of diſtillation: ſome holde opinion, that it wil become cleere, onely by ſunning it in an hot ſunny day, or two: and ſome doo vſe to circulate the ſame in Balneo, til it clarifie. But I haue found it an infallible way, to haue the ſame cleere at the firſt drawing, by diſtilling the ſame in a copper Balneo, with a Lampe onely, or ſo gentle a heat as may not be idle, and yet procure but a ſoft and eaſie diſtillation: And I thinke this was Doctor *Burcots* waie, who thought himſelfe verie cunning in the diſtilling thereof: becauſe there was not much cleere cinamon water to be had, in his daies,

How to make the extractions of all hearbs.

SOme are ſo curious in this worke, as that no other water, but the diſtilled water of the herbe only will ſatisfie their fancie heerein, although I ſee no great difference betweene the ſame, and an ordinary water firſt diſtilled and diuided from his impurities, but let the Chymiſt, nowe hee knoweth them both, take which he liſt, for I doo reſt indifferent, ſauing that I finde it an infinite matter, to diſtil ſo much Water, as wil be requiſite, for the gathering of any quantitie of this ſubſtance, or tincture as ſome tearme it. But with whether of them ſoeuer you begin, you muſt proceed in this manner. After you haue macerated great ſtore of the Hearbe, in ſeuerall Waters, vntill ſuch time as you finde each water deepelie died, or tincted with the colour of the hearbe; then hauing a large Balneo, wherein you may place diuers bodies of glaſse at once, you muſt euaporate all the water vntil in the ende you leaue nothing elſe, but a ſtiffe & drie ſubſtance, which our Chimiſtes do call the extraction of the hearbe. Some doo chooſe rather to work vpon the drie hearbe, then the moiſt *& alij è contra.* But if you worke vpon the diſtilled water of the herb, as vpon the Roſe, Balm, Buglos, *Carduus benedictus*, or any ſuch other Water of good vſe or account: then is it not amiſſe to lute, or ſet your heades of glaſse alſo vpon the bodies, with receiuers, therby to receiue the Water which aſcendeth, ſo as there may bee no loſse of your diſtilled waters, and yet alſo you may attaine to that ſecond water which you expect. This extraction, I haue heard highlie commended of many Artiſtes, and it may be it hath ſome better vſes in phyſick

phyſick, then I know or can imagine. But if I ſhal deliuer mine opinion thereof, I thinke it to be the fine and ſubtile earth of the hearbe, or flower, out of the which ſome curious Limner may draw ſome excellent colour for this worke, if hee make choice of the flower de Luce, white roſe, blew bottle, Marigolde, or ſome ſuch other Flower, as is of any deepe tincture: but I perſwade my ſelfe, that no philoſophicall vulcaniſt, or perfect paracelſian, will euer finde any true magiſterie, tincture, quinteſſence, or *Arcanum* therein.

How to make the Salt of hearbs.

BVrne whole bundles of dried Roſemary, ſage, Iſop, &c. in a cleane ouen, and when you haue gathered good ſtore of the aſhes of the hearbe, infuſe warme water vpon them, and make a ſtrong and ſharpe Lee of thoſe aſhes: then euaporate that lee, and the reſidence or ſetling, which you find in the bottom therof, is the ſalt you ſeeke for. This ſalt, according to the nature of the herbe hath his operation or vſe in phyſicke, and in my conceit, doth worke greater effects in the ſtomach, than any of the aforeſaid extractions. Some vſe to filter this Lee diuers times, that their ſalt may be the cleerer, and more tranſparent.

How to draw and rectifie a ſpirit of wine in diuers maners, aſwel with fire, as without fire.

IF you would diſpatch any great quantitie thereof, you muſt haue a large Balneo, wherein you may place ſixe or eight glaſſe bodies at once, with their helmes and receiuers, each of them faſtened to a leaden triuet, ẏ they may ſtand ſteady in the water, wher-

in

How to make the extractions of all hearbs.

SOme are ſo curious in this worke, as that no other water, but the diſtilled water of the herbe only will ſatisfie their fancie heerein, although I ſee no great difference betweene the ſame, and an ordinary water firſt diſtilled and diuided from his impurities, but let the Chymiſt, nowe hee knoweth them both, take which he liſt, for I doo reſt indifferent, ſauing that I finde it an infinite matter, to diſtil ſo much Water, as wil be requiſite, for the gathering of any quantitie of this ſubſtance, or tincture as ſome tearme it. But with whether of them ſoeuer you begin, you muſt proceed in this manner. After you haue macerated great ſtore of the Hearbe, in ſeuerall Waters, vntill ſuch time as you finde each water deepelie died, or tincted with the colour of the hearbe; then hauing a large Balneo, wherein you may place diuers bodies of glaſse at once, you muſt euaporate all the water vntil in the ende you leaue nothing elſe, but a ſtiffe & drie ſubſtance, which our Chimiſtes do call the extraction of the hearbe. Some doo chooſe rather to work vpon the drie hearbe, then the moiſt *& alij è contra.* But if you worke vpon the diſtilled water of the herb, as vpon the Roſe, Balm, Buglos, *Carduus benedictus*, or any ſuch other Water of good vſe or account: then is it not amiſſe to lute, or ſet your heades of glaſse alſo vpon the bodies, with receiuers, therby to receiue the Water which aſcendeth, ſo as there may bee no loſse of your diſtilled waters, and yet alſo you may attaine to that ſecond water which you expect. This extraction, I haue heard highlie commended of many Artiſtes, and it may be it hath ſome better vſes in phyſick

phyſick, then I know or can imagine. But if I ſhal deliuer mine opinion thereof, I thinke it to be the fine and ſubtile earth of the hearbe, or flower, out of the which ſome curious Limner may draw ſome excellent colour for this worke, if hee make choice of the flower de Luce, white roſe, blew bottle, Marigolde, or ſome ſuch other Flower, as is of any deepe tincture: but I perſwade my ſelfe, that no philoſophicall vulcaniſt, or perfect paracelſian, will euer finde any true magiſterie, tincture, quinteſſence, or *Arcanum* therein.

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in you may put ſome haie if you pleaſe, poure into each of them a reaſonable quantitie of the oldeſt and mightieſt ſacke, malmeſey, or muſcadell, becauſe theſe wines are ſtrongeſt, and yeeld moſt ſpirit. Your fire muſt be ſoft and gentle, ſo as you may tell eight or ten, betweene euerie drop that falleth. Drawe no longer, then til you may perceiue long veines in the helmes, for if they grow once deawie, or ſtand full of drops, then you may aſſure your ſelfe, that al the ſpirit is gone, and the flegmatike part of the wine aſcendeth: yet there be diuers, and thoſe of good iudgement, who doe moſt conſtantly affirme, that before the vaines appeare in the helme, the ſubtileſt ſpirit of all doth ariſe in a drie and inſenſible fume, which condenſating by the coldneſſe of the ayre, dooth reſolue into drops in the receiuer. Some doo vſe at the firſt pinte, alwaies to change the receiuer, and ſo diuide that, which commeth firſt by it ſelfe from the reſt, putting all the faint ſpirit together. And then rectifie them ſeuerallie in the like bodies and helmes, by a ſecond diſtillation, in the aforeſayd Balneo, & they neuer leaue to reiterate their diſtillations, vntill by making triall of a little thereof in a ſpoone, they finde the ſame being kindeled, to burne all away. Some faſten a ſpoonge in the mouth of the glaſſe body, and ſome couer the mouth of the glaſſe with an oiled paper, and ſo perſwade themſelues, that nothing but perfect ſpirit will penetrate either the ſpoonge or paper, and ſome put the crom of a white loafe in the bottome of the glaſſe, thinking thereby to ſucke and drinke vppe all the faint part of the ſpirit. But I haue found by mine owne experience, that after there is once drawne a pinte, or a pinte and a halfe of ſpirit from a gallon of good wine, if the ſame be put into a

large



large bolt receiuer as they terme it (which is a glaſſe hauing a long ſtraight ſteale of the bigneſſe of a musket, or double musket bore, with a great round hollow bal in the bottome conteining ſome pottle, or gallon, or two or three, if you can get thē ſo large (for the greater in content the better for this purpoſe) this bolt glaſſe muſt be wel faſtened to a leaden triuet in Balneo, and then, if the ſpirit that is ſo groſelie drawne, bee put therein, ſetting a ſmal helme of glaſse that may fit the ſteale, with a receiuer at it, then the pure ſpirit wil onelie aſcend, and the flegmatique part not beeing able to mount ſo high, falleth downe againe to the bottome as faſt as it riſeth, and ſo at once rectifieng, you ſhal haue your ſpirit perfect enough. Others thinking to attaine to a quinteſſence, or at leaſt to an oile of wine, that wil fleet and ſwim vppon anie other wine: they begin with a long circulation of the wine, firſt either in a Pellicane, or other large circling glaſſe, placing the ſame either in horſe dung, or in a Balneo, or ſome other ſuch like digeſting heat, by the ſpace either of a moneth or two, or three, euerie one according to his fancie, and then they fal to their diuiſion or diſtillatiō by a ſoft fire, keeping that by it ſelfe which commeth firſt, as a moſt rare and excellent ſpirit. And al this while, if I be not deceiued, we haue gotten nothing elſe, but the fierie part of the wine, or rather the burning *Aqua vitæ*, both of the wine and Tartar together, that are vrged vppe by fire, to knit themſelues both ſpirituallie and inſeparablie together. Then let vs ſee, if any truer diuiſion may be made without this Balneo, or any other outward heat whatſoeuer: naie, let vs conſider what may be done in a frоſty furnace,

where the Northern windes muſt ſtir vppe nature in ſtead of glowing coales. Here I am affraide either my wit or my will, will ſoone be frozen vp, neuertheleſſe ſince I am entred ſo farre, I will either breake the ice, or venture a fall, and if I ſlip, you ſhall ſee how I will froſtnayle my ſelfe the nexte time that I ride abroade in ſuch hard weather: I dare not here commend that newe conceipted way of rowling vppe and downe a large veſſell of wine many howers togeather, or after the ſame hath wrought vppon the ſeaes, ſo ſoone as it commeth to ſhore, preſently to clappe on a glaſſe helme vppon the bung hole being open, and luting the ſame cloſe to the caske to receaue that ſpirite which nature in her heate will ſodainely breathe out, and yet I will not altogether condemne the inuention, if ſuch a workeman haue it in hand, as is able to bring the ſtomacke of wine into a kindly ſweate. But ſuppoſe this to bee a righte, and naturall diſtillation, though it be temperatly performed, and without any forren fire, it is not that extreame colde, and congeled worke that was promiſed. But what if I ſhould ſend you into Frizeland, or Ruſhia, or Muſcouy, or into ſome other place neere vnto the Northen pole, and there will you after *Paracelſus* his manner to lay abroad into the open aire, either a but of ſacke, or muskadell, vntill the ſame were congealed into a maſſe, or lumpe of ice, and then percing the veſſell euen to the center, with ſome apt inſtrument of iron, to power out that inward life, or ſpirit which had retired, or withdrawne it ſelfe from the outward colde, into the warme fort, or caſtle of nature? I am affraid you would rather forſweare the triall, then take ſo long a iourny in hande. Then let vs ſee what may bee donne in this kinde in our owne country, though

not in ſo greate a quantity. I haue founde by thoſe few trialls which I haue made in Lõdon, that if in an extreame, and ſharpe weather in the winter time, a glaſſe of wine containing a pinte, or halfe a pinte in meaſure, and being well ſtopte with corcke, and brimſtone, or ſome other ſtrong lute, be expoſed to the aier on the toppe of ſome high leades, that the ſame will oftentimes congeale, and freeze in one night within the glaſſe, ſo as there will not remaine aboue a moitie, yea many times a third parte onely of the wine vnfrozen, which you ſhall finde ſo deepe of hewe, and color, and ſo mightie in ſtrength, and taſte, as that the beſte Gaſcoigne wine that comes from Burdeaux will ſeeme but Rochell wine in compariſon thereof. Here wee haue an entrance made into nature, and ſince wee haue gotten ſuch holde, let vs gather in more vppon hir. Peradue nture if the glaſſes were as thin as any vioII, ſmall in contente, rownde, and of an orbicular forme, riſing vppe with ſmall long neckes, and the ſame were placed Northerlie either in ſnowe, or water, or rather in water wherein ſome ſtore of ſalte peter hath beene firſte diſſolued, to make the water more inwardly colde; or peraduenture if before the ſtopping of your glaſſe you did diſſolue ſome reaſonable proportion of ſnow water into your wine, that either ſome one of theſe helps, or al together might work a perfect congelatiõ of the faint, and phlegmatick part of the wine, and ſo ye might attain to your deſire. But without al peraduẽture ther may be (by ſome means that are known but to a few) ſuch an outward continued cold maintained roũd about ỹ glas, as that in any reaſonable cold weather the ſpirit may be forced to fly inwardly for ſuccor into his own boſome & being once driuen to this

ſtreight, I account him but a ſimple chimiſt that cannot fetch him out, and diuide him from the reſte of his groſſe body. Proue the freezing of ale, or beere, or of the ſmaleſt kinde of wine, for they are likelyeſt to freeze, becauſe they containe but ſmall ſtore of ſpirite in them. Although I haue ſeene euen ſacke it ſelfe gather a thin icie cruſt in one nights freezing.

To make claret wine to mount vp in a red clowde into a glaſſe of conduit water.

CAuſe a glaſſe to bee made of the faſhion of thoſe which are commonly vſed in hower glaſſes, but of ſome greater content, and with a leſſe lippe, 'fill the ſame full of faire water, and whelme it vppon the mouth (which becauſe it is ſmall, and wanteth aire, no droppe will iſſue thereat) then put it into a beere glaſſe of the forme here deſcribed, being almoſt ful of claret wine, and if you holde the ſame wiſely, and that the glaſſes fit one another, you ſhall ſee the claret wine aſcende in the forme of a clowd, and that which remaineth in the neather glaſſe to be exceeding feint both in taſt, and color. If either the tincture alone, or the ſpirite of wine did here aſcend, and ſo incorporate it ſelfe with the water, I would hold it for a rare ſecret, and a light into ſome farther matter; but I feare you will finde nothing elſe therein but that when two bodies touch each other, that the wine being the lighter ſeeketh the vpper



place

place. And yet I muſt needes commend the inuention of that honeſt and learned Gentleman, from whom I had it, and no doubt before the diſcouerie thereof, it would haue beene thought an admirable conceit, to haue made two ſeuerall glaſſes to haue eſchanged their liquors, without any farther meanes.

Ad extrahendam vitam è vegetabilibus.

PRimum contere herbam, tunc digere Balneo, in vaſe lapideo benè obturato per octo horas, aut vlterius per noctem: tunc per torcular ſuccum exprime, quem in Balneo moderato non bullienti diſtilla, et in Alembici fundo gummi quoddam relinquitur: aquam hanc prædictis fæcibus contuſis affunde, iterum digere, deprime, & diſtilla in eodem Alembico, vbi gummi prædictum remanet, hoc opus continuetur donec aqua tincturam prioris, s. herbæ receperit, aut aliquid gummi poſt diſtillationẽ reliquerit: tunc totum illud gummi ſic collectum aqua ſua digere, quæ tum in digeſtione tincturam, aut puriorem partem eiuſdem gummi in ſe recipiet, et in fundo fæces relinquet, à quibus filtra aquam tuam tinctam quã rurſus in Balneo diſtilla, & ſic reperies in vitri fundo herbæ puram eſſentiam, ſicut puluerem, aut gummi ſpeciem præ ſe ferentem. Aquam ſerua, & puluerem ſicca vſui tuo. This was deliuered me, by the ſonne and heire of a Noble man, who receiued it of one of the greateſt practiſers of my time, and if it aunſwere the title, I am glad that it was my good hap to light vpon it.

How to giue a prettie grace both in taſt and propertie, vnto the ſpirit of wine.

IF you infuſe the ſame vppon the rinde of a ciuel ſower Orange, or Lymon, you ſhall finde a pleaſaunt

and comfortable taſte thereby, or if you woulde not haue the ſame deſcried by his colour, you may rediſtill the ſpirit ſo tincted in balneo. Some giue a ruch vnto the ſpirit of wine with roſemary, ſome with annis ſeedes, ſome with ſweet fennell ſeedes: ſom with one ſeed, or hearbe, and ſome with another, by infuſing the ſame a day or two vpon them.

How to draw the ſpirit of Hony.

AFter you haue diſsolued ſufficient ſtore of honie in faire water, to make a good Metheglen, and that the ſame hath wrought a reaſonable time by the addition of yeaſt, according to the manner of beere, and ale, then when the ſame is growne vnto a ſtrong and mightie drinke by lying, you may drawe a ſpirit from it, by diſtillation, as you doo either from wine, Ale, or beere.

How to diſtill Roſe Water, both good cheape, and at Michelmaſſe, and to haue as good yeeld, as at any other time of the yeere.

IN the pulling of your Roſes, firſt diuide all the blaſted leaues, then take the other freſh leaues, and lay them abroad vpon your table, or Windowes, with ſome cleane linnen vnder them. Let them lie three or foure houres, or halfe a day, but if they bee gathered in the deaw, then lay them abroad as before, vntill all the deaw be vaniſhed and gone from them, put theſe roſe leaues into great ſtone potes that bee leaded within, and well dried (ſuch as the Golde finers call their Hookers, and ſerue to receiue their *Aqua fortis*, be the beſt of all others that I know.) And whē they

they are well filled, ſtoppe their mouthes with good corkes all couered ouer with melted brimſtone, and then ſet your pots in ſome coole place, and they will keepe a long time good, and you may diſtill them at your beſt leyſure. This way you may diſtil Roſe-water good cheape, if buying ſtore of Roſes when you finde a glut of them in the market, wherby they are ſold for ſeuen pence or eight pence the buſhel, you put them vp as before. *And* ſome hold opinion, that if in the midſt of theſe leaues you put ſome leauen, and after fill vp the pot with roſe-leaues to the top, that ſo you ſhall haue a roſe-vineger from the roſe in your diſtillation, without the addition of any vineger at all. You may alſo keepe them in glaſſes, and *I* haue knowne ſome kept in little rundlets, that haue bin firſt wel ſeaſoned with ſome hot licor, & roſeleaues boiled togither, and the ſame pitcht all ouer on the outſide, ſo as no aire might penetrate the veſſell. *Qre.* If any ſpirit wil aſcend, if you make ſeparatiõ of that which firſt ariſeth from the roſe-leaues kept as before. Some for the more expedition in roſe-water do firſt expres the iuice, and then diſtill it, and afterward they do alſo diſtill the expreſſed leaues, and ſo they diſpatch more with one ſtill then others do with three or four. I haue ſeene very good roſe-water drawne this way, but yet I take the ordinarie way to be more kindly eſpecially if the head of your ſtill be made like a Limbecke with a large bucket to hold ſtore of cold water. And ſome commend the diſtillation of the roſe, violet, cowſlip, &c. that is performed by a deſcenſorie, hauing alſo a cooler of cold water about it, which at a certain cock you may emptie as it heateth from time to time, and fill with freſh water againe.

How

How to dry rose leaues, or any other single flowers in such shape as they growe, and without any wrincles, so as a bushell of moist leaues shal become a bushell in measure when they bee dry, and how to keepe rosecakes, and rose leaues all the yeare without wormes.

YF you woulde performe the same well in rose leaues, you must in rose time make choise of such roses as are neither in the bud, nor full blowne (for these haue the smoothest leaues of all other) which you must especially cull, and choose from the reste. Then take of right callis sand, and washe the same in some change of waters; and dry it throughly well either in an ouen or in the sunne, and hauing shallow square, or long boxes of foure, or fiue, or sixe inches deepe, make first an euen lay of sande in the bottome, vpon the which lay your rose leaues one by one (so as no one of them touche another) till you haue couered all the sand: then with a spoone, or with your hand, strew sand vpon these leaues til you haue thinly couered them all, and then make another lay of rose leaues vpon the sande, and so make *stratum super stratum* for foure or fiue layes one vppon another. Set this boxe abroade in some warme place in a hot sunny day (and commenly in two hot dayes they will become througly dry) then with your hande, or a spoone, you muste striue gently to get vnderneath them, and so to lift them vp without breaking. Keepe these leaues in iarre glasses bound about with paper, or parchment in some cupbord that is neere a chimney, or stoue, least otherwise by the damp of the aier they relent again, and so you loose your labour. I find the red rose leafe beste for this purpose by reason of his

his deepe colour. You may alſo drie Paunſies, Stock-gilliflowers, and other ſingle flowers, ſuch as will hold their colour beſt, in this maner, by taking away their ſtalkes, and pricking them one by one into the ſande, and ſo preſſing their leaues ſmooth with the other ſande, which you muſt lay vpon them. And ſo you may haue roſeleaues, and other flowers to lay about your baſons, windowes, and court cupboords, all the winter long. Alſo this skil is verie requiſite for a good ſimplifier, becauſe he may drie the leafe of any hearb in this maner, and lay it being drie in his herball with the ſimple which it repreſenteth, whereby hee may eaſilie learne to know the names of all ſimples which he deſireth. The ordinarie drying of Roſe leaues, is to lay them vppon hot leades, in a hot ſunnie day, and the ſooner you diſpatch, the better they will keepe their colour, and ſent. And when you haue dryed them throughly, you may fill a Roſe-water Glaſſe therewith, ſtopping it cloſe, and ſo they will laſt good a long time.

The powder of Roſe leaues, and ſo alſo of all other herbs & flowers, may be kept from all outward accident for one yeares ſpace, if there bee anie reaſonable care vſed therein.

If you would keep your roſe cakes without worms, you muſt now and then, when you haue drawne your bread out of the ouen, ſet them in, in ceeues, or vpon papers, and ſo of your roſe leaues; and if you hang them vp in paper bags, neere ſome Chimney where fire is ſomtimes made, you ſhall be ſure to keep them ſweete and good, for any vſe for which they will ſerue, although I know diuerſe that keepe their roſe leaues only according to the maner afore ſet downe.

Roſe water, and roſe vineger of the color of the roſe, and ſo of the Cowſlip, and violet vineger.

SOme infuſe roſe water vpon moiſt red roſe leaues, and ſo ſet it abroad on ſunning for a fewe daies, but this color cannot laſt long, but if you woulde make your roſe water and roſe vineger of a perfect ruby color, then make choiſe of the crimſen veluet colored leaues clipping away the whites with a pair of ſheres and being through dry put a good large handfull of them into a pint of damaske, or red roſe water, ſtop your glaſſe well, and ſet it in the ſunne till you ſee that the leaues haue loſte their color, or for more expedition you may performe this worke in balneo in a few houres, and when you take out the olde leaues you may put in freſh, till you finde the color to pleaſe you; keepe this roſe water in glaſſes very wel ſtopt, and the fuller the better. What I haue ſaid of roſe water the ſame may be intended of roſe vineger, violet, marigold, and cowſlip vineger, but the whiter vineger you chooſe for this purpoſe you ſhall haue it the better colored, and therefore the diſtilled vineger is the beſt of all others, ſo as the ſame bee warely diſtilled with a trew diuiſion of the partes made according as hereafter is ſet down, but ſome do highly commend ſuch vineger as is made of elder flowers, choicely pickt, and well dried before imbibition.

How to diſtill wine vineger or good Aliger, that it may be both cleere, and ſharpe for ſauce, or other vſes.

I knowe it is an vſuall maner amonge the nouices of our time to put a quart, or two of good vineger, into an ordenary leaden ſtill and ſo to diſtill it as they do all other waters. But this way I do vtterly diſlike both for that here is no ſeperation made at all, and alſo becauſe I feare the vineger dooth cary an ill touch with it either from the leaden bottome, or pewter head, or both. And therefore I could wiſh rather the ſame were diſtilled in a large body of glas with a head or receauer, the ſame being placed in ſande or aſhes. And note that the beſt part of the vineger is the middle part that ariſeth, for the firſt is feint, and phlegmatique, & the laſt wil taſte of aduſtion, becauſe it groweth heauy towards the latter end, and muſt be vrged vp with a great fire, and therefore you muſt now and then taſte of that which commeth both in the beginning, and towards the latter ende, that you may reſerue the beſt by it ſelfe. Here I coulde alſo aduiſe, or wiſh al Ladies, and gentlewomen to haue all their vineger ſerued in at their tables in ſawcers of glaſſe, or purſlaine, becauſe if it be ſtrong, and continew longe in a pewter ſawcer, it hath an intention towardes ceruſe, which I cold neuer heare commended either for wholſome meat, or ſawce for a mans ſtomacke. But it may be this is but one doctors opinion, & that of ſuch a one as neuer deſerued his degree in ſcholes; and therefore I will leaue the ſame at large vntill ſom better clarke do hereafter confirme this greene conceipt. Here I cannot omit the profitable obſeruation of one of our London Chimiſts, who after hee had drawn good ſpirit out of wine from muskadell, did by ſunning of the ſame alſo make good vineger the fæci call parte thereof.

Howe to keepe the iuice of Oranges, and Lemons all the yeare, for ſauce, Iulepps, and other purpoſes.

I know no reaſon why the iuice of the Lymon, or Orange ſhoulde not keepe as well in ſmall woodden veſſels, as either vergis, ſider, or perry, and it may bee the want of triall hath only proceeded of the charge that would ariſe in filling of a ſmall veſſell only with ſuch liquor. But how then haue we forgotten to prouide our ſtore in glaſſes which we may fill with a ſmal charge when oranges are to bee had for xii pence or xvi pence the hundred? Let vs then expreſſe their iuice, and paſſe it through an ypocras bagge to the ende it may bee the better clarified from all his impurities: with this iuice fill vppe a roſe water glaſſe (of what content you pleaſe) within an inche of full, couer the ſame with a loſe cap of leather till it haue done his boyling, which I haue ſeene continew many daies togeather, and when it becommeth ſtil, and quiet in the top, then fill vp your glaſſe with good ſalet oile, and then ſet it in a coole cloſet, or buttery where no ſun commeth. But the apteſt glaſſes which I can imagine for this purpoſe were ſtreight vpright ones, like to our long beere glaſſes, which I woulde haue to be made of purpoſe at the glaſſe houſe with ſmall round holes within two inches of the bottome, in which holes I woulde place fit faucets to draw the iuice thereat, as I ſhould haue cauſe to ſpend it. And ſo the grounds, or lees woulde ſettle to the bottome, and the oile woulde ſincke downe with the Iuice ſo cloſely, as that no aier coulde enter to begin any putrefaction therein; or inſtead of holes if there were glaſſe pipes, it were the better, and the redier way, be-

cauſe

cauſe you ſhall hardly faſten a fawcet well in the hole. You may alſo in this manner preſerue many iuices of herbs, that cary ſom ſtore of heat, & fire in them, by couering them a reaſonable thickneſſe with ſallet oile. But there is a better way then this by many degrees (although this bee ſufficient for ordinary vſe) for the long and true preſeruations of all iuices, and liquors, whatſoeuer, that haue had no digeſtion, or decoction already, wherein neither oile, nor any outward helpe is required, but only a trew, and philoſophicall rotation whereby the inwarde fire of nature may be ſtirred vppe in euery vegetable, to defende it ſelfe ſufficiently againſte all putrifying whatſoeuer. And ſo I haue kept both the iuice of cowſlips which (if I be not deceaued) will not laſt long by any ordinary courſe of preſeruing, and the iuice of oranges ſimply of themſelues without any addition, as ſound and perfect at the yeares ende, as they were the firſte day, or rather (to ſpeake truly) ſomewhat exalted in kinde. But becauſe ſuch ſecrets are fitter for a philſophers laboratory, then a gentlewomās cloſet, I wil not here offer that diſgrace vnto nature, to diſcouer any magiſtery vppon ſo baſe an occaſion. And as concerning the keeping of Oranges, and Limons in the ſame ſtate, bigneſſe, color, and taſte, as they are brought vs out of Spaine, or portingall, it may bee that in my next labours I will write at large thereof, and in plaine tearmes, according to thoſe vndoubted & approued trialls which I haue often made in mine owne houſe for many yeares together.

How to purifie and giue an excellent ſmell and taſt vnto ſallet oile.

note this ſecret hereafter

IHaue laboured the more to attaine vnto this ſecret, becauſe I knowe that oile is a moſt excellent and wholeſome food, and yet my ſtomach hath alwaies abhorred the ſame, till of late, that I found the meanes to take away the fulſome taſte thereof. But firſt of all, let vs ſee, what Maiſter *Bartholomæus Scappius*, the maiſter cooke of Pope *Pius Quintus*, his priuie kitchen, hath written in this behalfe. Hee willeth to heate the oyle in a cleane pipkin, and when it is thorough hot, to put therein a peece of bread or of dough, ſuffring the ſame to remaine in the oyle, by the ſpace of one fift part of an houre: and this breade or dough, will drawe vnto it ſelfe all the muſtie and badde taſte or ſent of the oyle, and ſo the oyle wil remaine pure and cleane. And in an other place, hee willeth, to take ſuch oyle as is not ranke, or ouer ſtrong in ſent (and if the ſame oyle bee made of choſen Oliues, it is by ſo much the better, than the common ſort) and to put the ſame in a veſſell of Earth or Copper, that hath a little hole in the bottome thereof, which you may ſtoppe with wax to open at your pleaſure. In this veſſel for euery quarte of oyle, adde foure quartes of faire Water, and with a Woodden ſpatle or ſpoone, beat them wel together for a quarter of an howers ſpace, and when you haue ſo doon, open the hole in the bottome, and let out the water, for the oyle doth naturallie fleet aboue, as beeing the lighter bodie: and as ſoone as the Water is paſſed awaie, ſtoppe the hole, and put in other colde water, and begin a newe agitation as before, and worke in the

the like manner diuers times as you did at the firſte, til in the end the oile bee well clenſed, and clarified. In the ſame manner you may alſo purifie all other ſorts of oile; as alſo capons greaſe being firſte melted, but then it ſhould ſeem you muſt vſe warm water inſtead of colde. All this is borrowed of the Popes cooke. *Qre*. If the oile had benne beaten the laſte time in roſewater wherein cloues, or nutmegs had benne infuſed before. And for the ſpeedier clarifying thereof (after your foreſaide agitations are paſte) you may ſette your oyle either in a ſtoue, or in the ſunne till it become cleere. A Grocer of good skill did aſſure me that by ſetting of ſalet oyle in the ſunne in the ſommer time, hee had ſeene the ſame to ſettle greate ſtore of foule and groſe lees, from the which by declination hee powred out the cleere oyle, and kept it till the next winter, and after the ſame had ben congealed with ſome froſty weather, hee found it the moſt ſweete, and delectable oile that euer hee taſted in his life. But an oile man of ſome experience tolde me that if ſome bruſed nutmegs were hong in a corſe bagge in the midſt of the oyle, that in time the ſame would ouercome any bad and lothſome taſt, that by ſome accident had infected the oyle, and giue it alſo a pleaſant ſent withall, or if you ſette a iarre in Balneo full of waſhed oile as before, with ſome ſtore of bruſed cloues, and rindes of ciuill Oranges or Lemons, and ſo continew your fire for two, or three howers, and then lettinge the cloues and riendes remaine in oile, till both the ſent, and taſte do pleaſe you; I thinke that many men which at this day do loth oile (as I my ſelf did with in theſe few months) wil be drawn to a ſufficient liking therof. I do know a means how to make

deiecti-

ye expeſſed oils can be carefully claenſed in ye ſort following

deiection of the Lee or fæces of ỹ beſt ſallet oyle, that commeth ouer, whereby the ſame will become moſt pure and cleere, but I feare that Saturne would frown vpon me (if without his leaue) I ſhould ſo boldly entermeddle with his charge.

How to diſſolue both Corall, and Pearle.

INfuſe the iuice of Lymons that is cleere, and hath ſetled his reſidence vpon the powder of pearle, and it will diſſolue the ſame, by the experience of a learned phyſitian who hath made proofe therof, and giuen the ſame with very good ſucceſſe in hot burning Feauers. The ſpirit of Vitrioll alſo, which riſeth preſently after the flegme, and before the oyle, will diſſolue both corall and pearle, if you ſet your glaſſe in warme ſande, or Aſhes. *Qre.* Whether the ſame may be ſafely taken inwardlie, being thus diſſolued, or rather fretted inſunder, and without any further ablution: but if you take twoe ounces of whole ſeede pearle, and infuſe thereon a quart of diſtilled vineger in a parting glaſſe, or in any other ſtrong glaſse of an apt forme, you ſhall in ſeuen or eight daies, diſſolue them into a ſoft or ſlimie ſubſtance, which you may after cleanſe by ablution, if you thinke good. And this is doone without any fire, or outwarde heate, during which worke, you ſhall ſee the pearle riſing, and falling in the glaſſe, in the manner of a continuall haile.

How

How to clarifie without any diſtillation, aſwel the white Wine as the Claret Wine vineger, wherewith you may make either gellies, or other ſawces.

CHooſe of the ſtrongeſt Wine vineger that you can get, and to euery ſix pintes, put the whites of two new laid egges, beate them well togither with a woodden ſpoone; vntill the whites bee turned into a froath or foame, then put the ſame into a new leaded or glazed pipkin, and cauſe the ſame to boile a little ouer a fire of coales, but not a flaming fire. Then let the ſame runne through a courſe white karſey gellie bagge, as they vſe to doo gellie: and when it hath runne through the ſame twiſe or thriſe at the moſt, it will be verie cleere, and ſerue for the aforeſaide purpoſes, and it will keepe good one whole yeare. And in the ſame manner, you may fine or clarifie any maner of wine whatſoeuer. But that which you ſhall gaine in the cleerenes, you ſhal loſe in the ſtrength of your wine.

How to make any decoction, whether it be of diet drinke or other, in the ſommer time to laſtlonger then otherwiſe it would without any helpe.

I Know this ſecret will bee verie profitable to all the Apothecaries, who in Summer time ſuſtaine great loſse by the ſowring, and putrifieng of their decoctions, wherof ſome be alſo very chargeable vnto them, and yet I feare, though I know the concluſion to bee true, eaſie, and not chargable, that it will ſcarſely ſatisfie ſome of them, which are of a curious humour, becauſe it is ſo plaine and ſleight, and therefore dero-

gatoryto their great skils that they ſhould ſo lõg time be ignorant in ſo ſimple a concluſiõ. Neuertheles becauſe I know that diuers others(if they ſhould diſlik) will make vſe thereof, I thinke the ſame very neceſſary to be publiſhed. One day, or two, before you feare the decay of your decoction, ſet the ſame on the fire and giue it a walme, or two, and ſo nowe and then reboile the ſame a little, and if you doubt that the ſame will become either too thicke, or too ſtrong by many newe decoctions, you may alwaies adde ſo much liquor there vnto made according to the firſt receipte, as you thinke will waſt away at euery boyling, and then keepe the ſame cloſe, and in a coole place. This may bee alſo performed in another maner without fire, or any other addition, & to laſt as many months, as it will daies the other way. But here I muſt keepe *decorum*, and ſute groſſe matters, with groſſe concluſions. It may ſuffice that I haue ſette downe any way for that, which no way was made common before.

How to draw the true ſpirite of Roſes, and ſo of all other herbs, and flowers what ſoeuer.

MAcerate the roſe, either in the water, or in his owne iuice, adding there vnto being temperately warme a conuenient proportion either of yeaſt, or ferment, leaue them ſo a few dayes in fermentation till they haue gotten a ſtronge and heady ſmell and beginning to encline towards vineger. Then diſtill them in Balneo in glaſſe bodies luted to their helmes, and dtawe ſo long as you finde any ſent of the roſe to come, then rediſtill, or rectifie the ſame ſo often till you haue purchaſed a perfect ſpirite. Alſo if you ferment the iuice of Roſes only without any leaues mixed therein, you may draw an excellent ſpirit from the

ſame

ſame, or if you keepe the iuice of damask roſes onely in cloſe veſſels well ſeaſoned with the roſe, it wil yeald a delicate ſpirit after it hath wrought it ſelfe to a ſufficient head, by the inward rotation, or circulation of Nature, but this worke asketh a longer time before you can proceede to diſtillation. The laſte way and beſte way of all other that I knowe, is by an outwarde fire to ſtirre vp the moiſt, and inwarde fire of nature, till the ſame be growne to the fulneſſe of a roſe wine. And when you haue once broughte it to a wine then euery Apothecary, and ordinary practicioner in this art will eaſily diuide his ſpirit from him, but they will all ſtagger in the firſte digeſtion, and though they ſhould either reele, or fall, I may not lende them my helping hand, otherwiſe then I haue donne already, vnleſſe I were aſſured that they were of the nomber of *Hermes* ſonnes, and not begotten by ſome baſe *Alchimiſt*.

How to draw the true and ſimple oi , Roſes.

DRy 20. or 40. buſhels of damask roſes, according to arte, put them with a ſufficient proportion of water (ſome commende roſe water, others rather the iuice of roſes) into a large copper body whoſe heade muſt haue a cooler of large content; lute the ioyntes well, and after a little maceration giue a proportionall heate vnto the body, and with the water the oile will alſo aſcend and fall into the receiuer. Proue the ſame manner alſo with the møiſte leafe, and if you ſee any apparant difference either in colour or thicknes between the oile & the water, them you knowe how to diuide the ſame eaſily, but if you can no way

diſcerne the oile, then poure that which you haue in your receiuer, into a bolt glaſse, hauing a long ſteale, or into ſome other glaſse, that riſeth vppe in a ſpiring manner, leſse and leſse toward the toppe: but fill the glaſse full, and ſo peraduenture you ſhall finde the oile after a little repoſe, fleeting vpon the toppe like creame, which you muſt ſeparate with a feather, and keepe by it ſelfe. This is either a certeine, or a verie probable way of proceeding. But if I coulde ſell the ſecret but for ten yeares purchace, I woulde paſse it with a generall warrantize againſt al obiectiõs, in the meane time let it ſuffice thee, that I haue in this little, exceeded my commiſſion.

Ypocras made ſpeedilie.

TAke of Cynamon vn.ſ. white Ginger dr. 3. cloues and nutmegs, of each dr.ſ. of the greines of paradiſe, ſc. 2. of pepper, ſ.c *r.* let them bee beaten ſomewhat groſely, and then macerated in halfe a pound, of ſpirit of Wine, ſtopping the veſsell cloſe with flower and water. Let al theſe ingredientes remaine ſix daies in infuſion, in a cold wine ſeller, ſtirring them togither twiſe a day at the leaſt: a fewe drops of this compoſition will tranſmute a boale of wine in to ypocras. This receipt may beſeeme the doctor that firſt deuiſed it, yet by his fauour, I thinke it requiſite, after you haue made the Wine thus Aromaticall, that you alſo adde a dewe proportion of ſugar, without the which in theſe daies there is nothing accounted either daintie or delicate, and then you muſt alſo paſse the ſame through an ypocras bag, tíl it bee fine. I thinke you may alſo performe the ſame with ſpirite of beere, ale, or wine lees, much cheaper.

A touch at Borax Christalinus.

THere is a certeine proportion of Borax to bee mixed with the *Regulus* of Antimonie, which must be chimically calcined togither, vntill the Borax haue glutted himselfe with the Spirits of Antimonie. And this is thought to be a safer vomit, then either the crude or calcined Antimonie, or the *vitrũ Antimonij*, that is broughte to the colour of the Iacinth, because in all these preparations, the body it selfe of Antimony is retained. But in this preparation you take holde of the spirits onely. This may safelie be giuen in powder, in the pappe of an apple, to the quantitie of ten, twelue, or fourteene graines: or else the same may be finelie ground vppon a Marble, and then imbibed with a small proportion of wine, which being dreyned from the powder, must bee taken fasting, in the morning, according to the order of other vomits. I cannot here omit that, which I will neither warrant, nor condemne, (although I knowe to which side I would rather incline before trial) that infinite extention of the glasse of Antimony, vppon which there may be made so many seuerall infusions, and all of them of sufficient efficacie to giue a vomit, as that by some men of note, and good reputation, it hath beene thought to be a necessary part or member of the phylosophers stone.

How to make Camphire remaine liquid in the forme of an oile.

FIrst heate a brasse morter, then beat the Camphir, as thin as you can, put thereto by little and little at

one equall proportion of the oyle of Almondes, newly drawne, and incorporate them well together, and it will remaine in the forme of a cleere oyle without any congelation. I thinke the ſpirit of Wine wil diſſolue the ſame, but when you diuide the ſpirit by diſtillation, the oyle is likely to congeale in the bottome of your glaſſe.

An artificiall extraction, of that ſweet ſirrop of raiſins, currans, and proines.

TO euery Gallon of faire water, put three pound of Malaghie reaſons, or reaſons of the ſunne, either ſtampt or vnſtampt, leaue them ſeauen or eight daies in infuſion, in ſome little halfe tubbe, hauing a fawcet in the bottome thereof, at the which you may dreine out gently al that ſweet ſirrop which lyeth in the bottome, drawing ſo long as you ſee any deepe colour in the water, then ſtop the fawcet, and put in ſome more fruit, and deuide as before, and hauing purchaſed a ſufficient quantitie of this ſweet lyquor, boile the ſame away in an ordinary chafer, or kettle vntill it grow vnto ſome thickneſſe, and then for feare of aduſtion, you may finiſh the ſame in Balneo. Expoſe this in diuers apt veſſels, and in ſmall quantities to the heate of the ſunne, againſt a bricke wall, vppon plates of lead, when the ſunne is of ſome reaſonable heigth, as in Iune, Iuly, or Auguſt. And if you bee carefull in my direction, you ſhall haue a moſt rare, and delicate marmelade (if I may ſo tearme it) and the ſame alſo candied and hardened into a very ſtiffe ſubſtance, moſt naturallie taſting of the fruite from whence it is drawne. You may worke after the ſame manner, both in figges and currens, which for more cleanli-

cleanlineſse, I could wiſh alſo to be waſhed in ſome change of Waters. *Qre.* What an Artiſt may do in this practiſe, both in Cherries, Grapes, Damſons, Gooſeberies, Barbaries, and generally in all Engliſh, and outlandiſh fruites and flowers. But then it is requiſite to dry ſome of thoſe fruites ſufficiently in the ſunne, before you make your imbibition, and to roaſt or partch others with ſome farther heat, diuiding the skinnes, cores, and other refuſe, before you make your extraction.

How to preſerue damſons, cherries, peareplums, gooſeberries, &c. in their owne iuice or ſirrop without the addition of roſewater.

LAy a conuenient number of plums, cherries, gooſeberies, &c. in a deepe ſallet diſh or ſiluer baſon, one by one, couer the ſame cloſe with ſome other diſh, and ſet it vpon a chafingdiſh of coales, beginning with a gentle heat, vntill the fruit haue gathered a great deaw or moyſture vnto themſelues, then take of the ſweeteſt Barberie ſuger and ſtrew the ſame vpon the fruit, beeing firſt brought into a moſt fine powder (twelue ounces of ſuger is a ſufficient proportion for one pound of fruit) but if you pleaſe you may allow weight for weight) continue your fire vntill ſuch time as you ſhal find that the ſirrup hath pierſed the ſtone euen to the kernel, for then they are boiled ſufficiently, but if ỹ kernel do wrinkle or run together, then they are ſomewhat ouer boiled. Alſo you muſt not forget to turn them now & then, and to obſerue al other circumſtances, as you vſe in the ordinary manner of preſeruing.

The end of the booke of Diſtillation.

The Art of molding and caſting.

FIrſt you muſt labor common loame a little moiſtned, to a ſtiffnes: working ỳ ſame ſmooth with a rolling pinne, as they vſe to doe paſt, then make thereof a coffen like vnto a pye, ſauing that you ſhall need no other bottome but the bord, or table whereon you worke, and that you muſt faſhion your coffin according to the patterne, which you meane to caſt, for ſparing of your pap hereafter mentioned. Faſten well this coffen, or ſides of lome to your table with your fingers, ſo as the thinne part of your pap may not run out at the bottome, then take a branch of roſemarie, tyme, or Iſope &c. and at the end of the ſteale faſten a little lump of loame made taperwiſe with the ſmall end thereof towards the ſtalke, & the greater end faſten likewiſe to the mideſt of ſome part of the ſides of your coffin in the inſide, ſo as the ſame may ſticke faſt ouerthwartwiſe, and that no part of your braunch either touch your table in the bottom, or reach to the vppermoſt part of the ſides, for which cauſe you muſt alwaies make your coffin deeper thē your braunch, or flower which you meane to caſt, then make your pap in a woden diſh, or ſtone panne, preſently ſtirring the compoſition well togeather,

either with your finger for a ſhift, or ſome other apte bruſh,or penſill,that there may be a ſolution,or mixture of the licor,or powders together. Then powre the ſame ſpeedily about the ſides of your branch,hauing care that you doe not loſen the ſame from the coffin, and bee ſure that you make pappe enough to couer all your braunche at once, whereat,by often practiſe you ſhall eaſily geſſe. Let the ſame ſtande a prety while .s. about the fourth part of an houre, and the whole compoſition will harden into a maſſe or lump, then take away your lome ſides from it which will ſerue oftentimes, and you haue your branches included therein, then with a little ſticke digge out the peece of lome, which you faſtened to the ſtalke of your braunch, but ſo as you impare not the molde, then lay your branch abroad for a time in ſom ayrie or windy place,but not in the ſun,and after neale it in a little earthen furnace, making firſt a foundation of Charcoles,and afterward laying your molde vppon them,and then couering your mold with more charcole, and kindling your fire at the vpper moſt coales, and ſo continew your fire by adding of freſhe charcoles,till you ſee that the molde be well nealed.s that it be red hotte, both within, and without,which you ſhall perceaue by a little hole, which the lome made at the end of the ſtalke, which they call their gitte: if enclining your body you look therein carefully. Then let the fire goe out of it ſelfe, and ſuffer the molde to coole; then hath the branch or flower lefte the impreſſion thereof in the molde into the which when you haue caſt your gold,or ſiluer,you muſt dipp your mold in cold water,whereby it will fall in pieces, and you ſhall finde your braunch of gold and ſiluer in all points according to the patterne. All other neceſſary cir-

circumſtances for this art doth preſently enſew.

1 You muſt firſt roaſt or burne the plaiſter of Paris, before you mixe the ſame with the reſte of the powders, which ſome men do in this manner. They breake the ſtones in great gobbets, and then laying ſome coales in a little ſtone furnace, ſuch as are ſolde at more gate; they lay theſe pieces together vpon the coles, and then couer them ouer with coles, and after kindle the fire at the top, and ſo let the ſame burne downewardes, and with one fire ſo made they will be ſufficiently burnt, then beate them into powder, and ſearce them as before, but if they breake not eaſily then they doo burne them longer. Others thinke it a better way though more longe and troubleſome, to beate the plaſter in a great iron morter to a fine powder, and then to ſette the ſame in the fire, in a large ſtrong earthen pot, or pipkin, making a good fire vnder it, and ſtirring it continually, with a wodden ſpattle for an houre, or there abouts, and vntill you ſee the ſpattle leaue as it were a viſible line, or tracte behind it, after you haue ſtirred the pouder round about there with. Preparatiõ of the plaiſter.

2 Let your powder whereof you make your pap conſiſt of burnt aleblaſter, and plaſter of Paris both of them finely powdred, & ſearced, & of ỹ like fine powder of newe earthen pots, ſome vſe the powder of bricke in ſtead thereof. To three parts of the powders of Aleblaſter, and plaſter firſt mixed in equall proportion, mingle one parte of the powder of earthen pots or bricke: but many do caſt of in wax, only in moldes conſiſting in aleblaſter alone, or plaſter alone, or both together without any other compoſition. Compoſition of the pap.

There bee ſome that thinke one ſhall caſte more ſharpely if hee doe likewiſe grinde the aforeſaide

powders vpon a Marble ſtone after they bee ſearſed, but if you ſearſe onely, the ſearſe muſt bee exceeding fine. *Qre.* If *Gypſum*, *alumen plumoſum*, or ſpawde bee not good to mingle with the reſt of the powders. I haue ſeene oftentimes many good patternes of mettall, caſt off very ſharpely in ſpawde alone, but you muſt heat the flaskes wel, before you pour in the met tals, and you muſt ſprincle the ſpawd with ſome moiſture, wherin there is ſome *ſal Armoniack*, before you doo imprint your patternes, ſome commend ỹ light and downy ſubſtance, finely gathered from the vpper moſt part of the aſhes of old coales.

Making of the pappe.

3 Of the aforeſaid powders, you muſt take a reaſonable quantitie at once, putting the ſame into a ſtone porrenger, or woodden diſh, and put thereunto ſome cleane water, wherein ſome diſſolue an ounce of *Sal Armoniack* to euery pottle of water, and preſently ſtir it wel togither as before, to make a perfect ſolution and mixture of the matters aforeſaide, this pap muſt not bee made too ſtiffe, when you caſt off braunches of hearbes or flowers, for then it woulde preſſe the leaues together. Sometimes temper with warme water, and ſometimes with colde, to make the pap drie the faſter, for ſome kind of workes.

Preperation of the papp.

4 If you would attaine to a perfection of this pap, you may weigh your powders before you put them into your water, and meaſure the water, which you mingle with your powders, and trying ſeuerall proportions of water and powder together, you may obſerue which of them proueth beſt in the moulds, and euer after continue the ſame.

Waters for the pap.

5 Some doo mingle *Aqua vitæ*, ſome vrine, and ſome put a ſmall quantity of *Sal Armoniack* to a great

great proportion of water, and therwith temper their pap.

6 As you poure in your pap, knock vpon the Table with your fiſt, hard by the cofin, to make the pap ſettle the better to the bottome, and more cloſe to the patterne. To ſettle the pap.

7 If you woulde ſaue your patternes, as being of plaſter, wax, mettall, Aleblaſter, &c. Then take ſome clay that is well tempered, and not ouerſtiffe, and make the *baſis* thereof in diſcretion, according to the thickneſſe of your patterne, and hollow or dimple the ſame a little, according as the faſhion of your pattern ſhall require: then preſſe your patterne gentlye into that hollowneſſe, and with your fingers and knife together, worke vp your *baſis* with more loame, till by as neere a geſſe as you may, the iuſt one halfe of your patterne be euen wrought vp round about, then ſet vp your lome ſides as before in your branches or flowers, and poure in of the pap likewiſe as before, till you haue couered all the vppermoſt part of the patterne, that lyeth bare, with ſome reaſonable thickeneſſe: then let it reſt a prettie while, till it bee growne to ſome ſtiffeneſſe, and after take away your ſides, & you ſhal finde the one halfe of the patterne truely imprinted in the dry pap. Then lay that halfe vppon your table, with the hollow part vpwardes, wherein the impreſſion remaineth, and clap on your loame ſides againe, leauing your patterne ſtill within the pap, and poure more pap vpon the patterne, till you haue alſo couered the other part of the pattern with ſome reaſonable thickneſſe as before: then let it dry, and take away the ſides, and dip the whole moulde a litle in water, and you may with your handes verie eaſilie, deuide the one ſide from the other. Take out Moldes of 2 partes.

your patterne, and keepe it to caſt againe withall, as often as you pleaſe. Note here, that you muſt print ſome little gutters or hollowes in the lome, whereon your patterne lyeth after you haue fitted it, with the iuſt halfe of your patterne, and this is becauſe ẏ pap which is powred on the ſecond halfe ſhal fil vp thoſe gutters or hollowes, wherby you may, after you haue taken out your patterne, knowe howe to ſhut your mouldes very cloſe together, which otherwiſe you ſhould neuer be able to doe.

How to neale many moldes at once.

8 You may neale many moldes together, by laying one by one in a chimnie, with a ſmall diſtance aſunder, but firſt making a good lay of dead charcole vnder them, and after couer them all ouer with charcoles, making ſides about the coles of loſe brickes, and remember to lay the ends of your moldes where the gitties or entrances into them are made, towards you, that as you ſhal ſee cauſe, you may now & then ſtoop and look into the moulds, to ſee when they are throughly nealed, that you may ſurceaſe the making of any more fiers.

9 It is alſo very requiſite to haue deep pannes, very full of ſand, or aſhes that be warme, wherein to ſet your mouldes, when they are made ready to caſt in, and then to fill vp the mouldes euen to the neckes or gitties of them, for by that meanes you ſhall keepe your gold or ſiluer, from paſſing through the molds.

Molding many branches togecher.

10 Mold many branches of Time, Iſop, roſemarie, &c, at once. that if ſome of them ſhould faile, yet one or other might proue wel, for the charge is not great, neither of your moldes, nor yet in the melting of your mettall.

What heat in the moldes.

11 When you meane to caſt any golde or ſiluer, you muſt neale the molds red hot againe, & caſt preſently.

ſently. But if in pewter or lead, a leſſe heat will ſerue, and ſome vſe no heat at all, but caſt the ſaide mettals in the moulds being cold.

12 You muſt make a vent with a ſtrawe from the bottome of the mold vnto the top, wherby the mettal (finding aire) may run the better, or rather make a double vent from each ſide of the mold; this ſtrawe muſt be laid in the cofin, before you pour in the pap, and when the mold is nealed, the ſtraw conſumeth to aſhes, and the vent appeareth, yet I haue ſeene many patternes caſt, without giuing any vent at al. Ventes for the molds.

13 Before you caſt of, cleer your molds from ẏ aſhes which are left behind, vppon the conſuming or burning out of the branches, flowers, wax patterns, &c. in this maner, preſently after the mold is cold inough to hold in your hand, take it by the great ende, & pat the mouth or gittie which is at the other ende, in the palme of your hand, till you can perceiue no more aſhes to iſſue out of your molds, and after by applieng the noſe or pipe of a paire of bellowes againſt the gittie, and ſo blowing out the aſhes. Som poure in quick ſiluer at the gittie, mouing the ſame vp and downe a prettie while, and ſo cleanſe their moulds. Clenſing of the molds

14 You may caſt off in wax, in the powders aforeſayde, but then you muſt holde your moldes in hot water for a time, and ſo the work may the eaſlier bee taken out, and in the ſaid moldes you may caſt off in wax diuers times, one after another. Note alſo, that you muſt dip the ſaid molds a prettie while in hot water, before you caſt off in wax, and preſentlie after, you haue taken the molds out of the water, & before you caſt; you muſt drie them with a ſpunge. Wetting of the molds

15 Some are ſo preciſe in this art, as that they will neuer mold any fine patterns but in faire weather, or in ſummer time, and perſwade themſelues ẏ t̃ their Times to mold in.

molds

moldes do receiue the impreſſion moſt liuely, and alſo do dry moſt kindly.

Gittee large.

16 Let your gittee where you powre in your mettall be wide and large, according to the greatneſſe of your patterne, for that the weight of your mettall being therein, will by the peize thereof thruſt downe the reſt that runneth firſte into the fartheſt parte, or corners of the moldes.

Hollowing of ỹ gittee.

17 When your molds conſiſt of two partes, before you neale them, you muſte with a knife hollow, or take away ſome parte of the gittee, in the inſide of either parte of your molde, making the ſame like a gutter thereby to conuey the mettall the better into the whole molde.

Caſting in glewe and wax.

18 But if you will caſte any imboſſed patterns, of waxe, or any other ſlender or curious paternes, that be vnder cutte as they terme it .s. ſuch as ſtande anticke wiſe, and whereof you may ſee ſome partes behinde, which will not ſuffer them to come oute of the moldes without breaking either the patternes or the moldes, then muſt you vſe this deuiſe following. Take one pound of common glew, put thereto one ounce of yellow waxe (ſome put two or three ounces) but firſt diſſolue the glew by a gentle fire, with a little water into a thicke body, and after this ſolution, put in your waxe, into which waxe, ſome doe vſe to put a little quantity of the fine powder of charcole ſearced, and ſome mingle the blacking only that commeth of the ſmoke of waxe or roſen there with. Then laye an euen peece of lome according to the faſhion of your patterne, but an īnch broder then the paterne and in the midſt thereof place your paterne firſte oyled, then ſette vppe the lome ſides of your coffin and powre your glew thereon, being of a temperat heate

and

and when it is throughly cold, take away the ſides of loame, and take out your patern gently. Note alſo ẏ whē you haue molded any gentle pattern in glue, you may open the moldes by ſlitting of them, or bowing them backwards therby the eſilyer to get out the patterne without danger of breaking it, and yet the mold will returne to his firſt ſhape.

19 Note that you may diſſolue your moldes of glew againe, and caſt often in them according to the manner before ſet downe. Glewe ſetueth often.

20 *Qre.* Of hanging patterns by a threed in the glew aforeſaid being firſt oiled ouer, vntil the glew be colde, and ſomewhat ſtiffe, and then carefully cutting out the patternes without impairing the molds. Here a good wit may find greate varietie of matter whereon to meditate, but I holde it not conuenient for the greate hindrance, to all the Iewellers, and workemen in golde and ſiluer, to diſcouer all the ſecrets either of this compoſitiō, or of the reſt that are contained in this diſcourſe, and that for ſufficient reaſons beſte knowne vnto my ſelfe, and ſuch others as haue ſpent their time, and thereby attained to any exquiſite skill in this art of caſting. Although I muſte needes confeſſe that I haue giuen ſufficient lighte, euen to the purblinde workeman to performe any excellent conceipts by this diſcorſe. And as I looke for thankes of many that are ignorant herein, ſo I am ſure to receaue blame of thoſe who with long trauaile and expence, haue skarcely attained ſo muche skill as they may finde in this worke with a fewe houres ſtudy. Neither may I ſafely ſette downe the infinite vſe of this arte, for feare of the infinite abuſe which would follow by the lewde, and ſiniſter practizes of idle, and ill Whole patternes caſt without defacing the patterne or molde.

disposed persons, that are ready with the Spider, to turne euery thing which they touch into poison.

The trewe heate of your molds and Wax.

21 Note that your moldes of glewe muste bee throughly colde before you caste your compounded waxe therein, and the waxe must be taken in a temperate heat, least it happen to dissolue the molde.

To lessen your patternes.

22 Note also the moldes of glew, the longer they stand before you cast in them, the lesser they waxe by reason of the water that vanisheth away; and therefore it is an excellent deuise, not only to caste strange and hard patterns in, but also to cast of your patterne into a lesse compas. So that if the grauing of the workmanship of your pattern be grose and wide assunder, by this meanes it will become lesse, and shewe much smaller and finer to the eye. And if at the first casting in glew when your molds haue stoode three or foure daies to dry, your patterne come not little enough to your mind, then caste that little patterne againe in glew, and let that molde lye as longe a drying before you pour in your wax, and so with often casting in this fashion you shall bring your newe paterne to bee of a greate deale lesse compasse, and finer workemanship then the first patern. Note also that it is very requisite to make your moldes of glewe very thicke, for feare of warping, or casting awry. It is also thought very requisite to annoint the moldes within very delicately, with a fine calaber pensill, and with some of the thinnest of the aforesayd oiles, before you put in your waxe.

Casting in brimstone.

23 You may also caste, all your mettaline patterns in brimstone, and from thence in waxe, and after in aleblaster, and so into mettall.

24 Some will molde greate, and curious patternes in

in the crumme of fine manchet wel tempered into a paſt, and preſſed hard vppon the patterne, and ſome commend flower, and the fat of bacon diſſolued, and ſtrayned. Molding in cromes of breade.

25 Note alſo that you muſt firſt caſt all your curious patternes in yellow wax tempered with the fine powder of ſmale cole, and wrong through a cloth, and ſome thinke it beſt to put in the ſmale cole powder when the wax beginneth to coole, and then to ſtir it well that they may incorporate together. But if you wil caſt of in red wax, then muſt you put in ſome red ocre inſteade of ſmale cole, to color your wax withall. Some comend this compoſition of wax beſt ſc. 2. parts of old yellow wax one part roſen, & a little blacking diſſolued, and mingled together, and then ſtreyned through a fine cloth: and when you haue once gotten your patternes in wax, then mold thoſe waxen patternes in the aforeſaid plaſters, alleblaſter, and bricke powder, and then burne out the wax as before in flowers, and cleer the moldes, and ſo caſt them into what mettall you pleaſe. Alſo when you haue molded any patterne in glew, you may caſt it of in Alleblaſter if you pleaſe. Artificiall wax to caſt in.

26 Some do greatly commende the fine powder of Flaunders melting pots that be new, and bole Armoniack mingled together in equall partes, you muſt put this powder in water, and mak agitation of them together, and then powre away the ſame water ſodainely into ſome cleane veſſell, and put in more water, reiterate your agitation as before, and ſo continew this worke vntill your water which you powre away from the powders becom cleer; then let al this thick water ſo gathered together, ſettle wel, and then dreine away the water by declination, and after drie Pōwders to caſt in.

this powder, and keep it to make pap thereof at your pleasure. And this was commended to me by excellent men for an excellent receit.

To cast in moldes of wax.

27 In this manner following you may cast of in wax, and also in waxen moldes, which is a delicate, and necessarie secret for them that can tell how to vse the same to the best purpose. You must take three quarters of a pound of rosen (yet some vse no rosen at all) and a pound of yellow wax, and an handfull of sifted ashes, melt them altogether, & put in the ashes when the rest is molten (in steede of ashes some vse spawd, or plaster burnt as before) and presently after the putting in of the ashes you must hold an iron that is red hot, or a great glowing coale in the dissolued substances, chaunging your iron, or coale as often as you se cause, for by this meanes you shall keep your materials from boyling ouer. In this substance you maie mold anie patterne that you please, then take out the patterne, and you may cast therein infinitly with a mixture consisting of two partes wax, & one parte rosen, but let the same bee but of a temperate heat when you pour it in, least you melt your moldes, and after it hath taken the impression, you may forthwith lay your moldes in water to coole your infused substances the more speedily, wet those mouldes onely with a fine cloth, or pensill vsing no oile but in the gittee onely.

Strong moldes for grosse patternes,

28 If you would haue a strong compositiõ, or earth wherein to cast great and grosse patternes of copper latten &c. Then take one part clay, tempering the same throughlie well vpon a marble, with flockes, adding therevnto two parts of bricke, and halfe a part of plaister wel burned (as before) work as ẏ said sub-

ſubſtances well and painfully together, and caſt your mettall therein after you haue molded off your patterns, you muſt ſet your moldes in a veſſell full of ſand and preſſe the ſame as harde as you can aboute the molde, euen from the bottome to the toppe thereof. And ſom vſe to caſt copper, and latten works in high gate ſande, ſome in lome only, ſome in cuttle bone, and diuers other ſubſtances, which becauſe they are more common then the reſte, I paſſe them ouer in ſilence.

29 The potters white claie is alſo very good ſubſtance to emboſſe in, if you drie the ſame throughly, and after beate into fine powder, and then ſearce it, and temper it with warme water. In the working, and alwaies when you leaue worke, keep your claie moiſt in a wet cloath, till you haue cauſe to vſe it againe. Matters to imboſſe in.

30 Some holde opinion that it is beſte to ſpende your aforeſaid powders whilſt they are freſh, and before they haue lien longe, for that the plaſter of Paris being of an attractiue nature, and deſirous to gain the moiſture which it hath loſte in the burning, wil looſe his binding force if it bee not quickly ſpente, but after your molds be once nealed, you may keepe them a long tim ſo as you ſtop the gittes of them, that no duſt may enter into the moldes. The laſting of the powders.

31 Oile al your patterns of mettals, plaſter, or wax with a fine penſil, and with the oile of ſweet almonds but others eſteeme the oile of *T*urpentine or Spike, to be the beſt, by reaſon of their thinneſſe, whereby they will not fill vppe any parte of the worke. Then you muſt pat the paterns gẽtly ouer with a little clean bumbaſt, that you may leaue the oile very thin vpon ẏ patterne, ſom vſe *aqua vitæ* only. And ſom oile their Oiling of the paterns.

wodden patternes with oyle of waxe, butter, or larde melted, to keepe them from bliſtering in the molds.

The heats and toughning of Sol and Luna.

32 Learne of the Goldſmithes howe to take your golde and ſiluer in their true heates, as alſo with what additions to make the mettall runne the better and ſharper, and how to toughen them both, that your worke proue not brittle. If you finde this work either too troubleſom, or too curious, then make your molds ready, and carrie them to ſome Goldeſmithes, which haue their apt furnaces for the purpoſe, and let them heat, and toughen your mettals, and then caſt them in your moldes ſo made ready as before.

Colloring, & boyling of Sol, and Lnna.

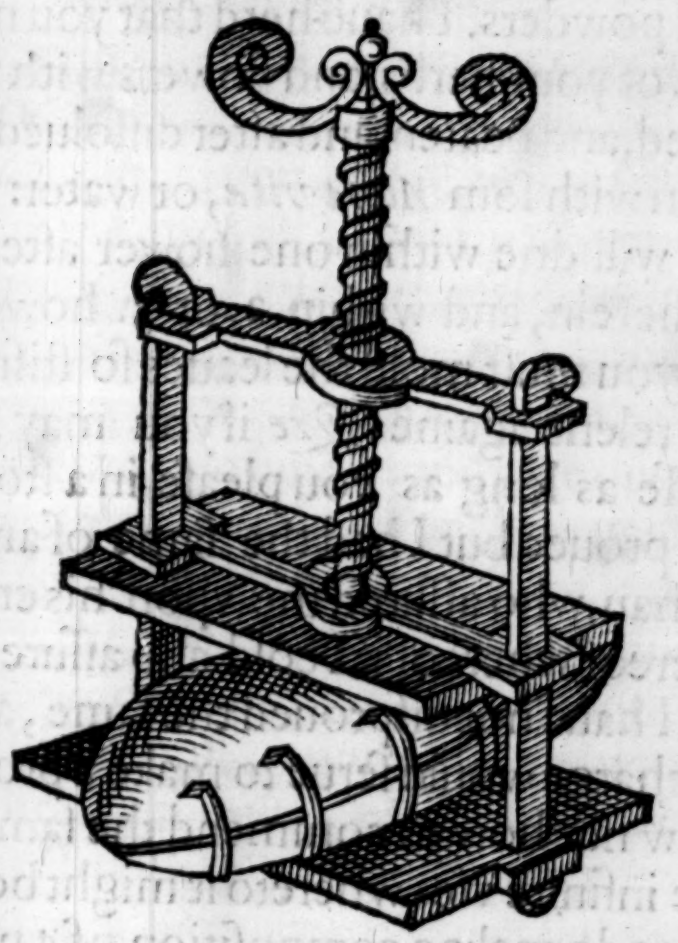
33 How to coloriſh your patternes in golde, and how to boile thoſe that are caſt in ſiluer, I muſt refer you to the Goldſmithes, although I could eaſilie ſet downe both the matter, and the manner thereof, but becauſe therein I ſhould diſcouer a ſecret, that concerneth their whole trade, I haue thought good to ſuppreſſe it for this time.

Which patterne commeth ſharpeſt.

34 The firſt time th atyou caſt off your patterne, it will come moſt ſharpely, if the worke be performed as it ought, and euer after more bluntly, but yet the ſelfeſame patterne will ſerue oftentimes, and deliuer his impreſſion truely, though not ſo perfectly in the eie of a worke man as at firſt.

35 Note, that you muſt haue a little preſſe of copper or Iron to hold faſt your mouldes after they are made ready to caſt in: eſpeciallie when your moulds conſiſt of two partes, and the outſides of theſe partie moldes you muſt cramp together, when the molds

are



A copper presse.

are cold, with many little Iron Wiers made for that purpose; and then with a knife close the ioynts all ouer with some of the said pap, which closing or luting, you must also reiterate if you see cause, after the mouldes be nealed, placed in your presse, and readie to receiue the mettals, at which time it shall not bee amisse in like manner to close vp and stoppe all the crackes, or chinkes of your moulds which you shall finde in them, after they be made ready to cast in, for otherwise, your mettall will oftentimes run through your moldes, and then is all your labour lost. Cramping wires.

36 But in the casting of branches, of hearbs or flowers, some commend the sprinkling of the branch, or flower, first ouer with good *Aqua vitæ* well rectified, and some doo wet the branch, first with a little pap that is made very thinne with *Aqua vitæ*, and the afore- Preparing the herb or flower.

afforesaid powders. I haue herd that you may stiffen the leaues of your herbs, and flowers with fish glew, finely sliced, and beaten, and after dissolued in a clean leaden pan with som *Aqua vitæ*, or water: the leaues so stifned will drie within one hower after they are dipped therein, and within 2. or 3. howers after at the most you must mold the leaues so stifned, or els they will relent againe. *Qre* if you may not keepe them stiffe as long as you please in a stoue. This I haue not proued but I had the same of an excellent woorkeman, who assured me vpon his credit of the truth thereof, whereof if I cold also assure others (as hitherto I haue not disproued the same, and a small time, or charge would serue to make a proofe thereof) I know not how to commend the same sufficiently for the infinite vses whereto it might be aplied.

A composition of tin.

37 Some do make a composition of 4 parts of new Tyn, to one part of Latten, and cast diuers patternes therein.

Casting hollow.

38 If you would cast an egge, or any other patterne hollow thereby both to haue your worke the lighter, as also to spare gold and siluer, which groweth to be costly in sad workes; then must you line both the insides of the party mold with thin past, made of tough flower, and water onely, and wroughte into an equall thicknes by the meanes of a rowling pin whose portrature you shall finde *Postea* nu. 39. Note also that vpon one of the parts of your mold, there must be made a crosse of wire fastned into the mold by turning of the endes of your wire into the same, then lay both the sides of the mold togither, each of them hauing their thin past fitted within, iust with the circle thereof: then at the gittee of your mold powre in

some

ſome plaſter made into pap, if you caſt but in lead or elſe ſom of ỹ firſt compoſition .s. plaſter, Aleblaſter, and bricke together, if you caſt of in gold and ſiluer; but firſt you muſte anoynt all your paſt very neately with a fine penſill, and with the fat of bacon, melted with a gentle fire, and before it congeleth; for this maketh your worke to come very ſmoth on the outſide. Then take your mold in ſunder, and take out the paſt out of either parte, and hang in the core againe in the firſt holes, ſet your mold together againe, cramping, and luting it on the ſides, and then neale it, and poure in the mettall, which running round about the core muſt of neceſſity be hollow, and of an equal thicknes, then at ſome hole in the end, or ſide of your work you may picke out all the plaſter, or other compoſition, and ſo you may caſt any patterne both light and hollow: you muſt alſo remember to make your gitty, and to vſe the other meanes ſette downe *Antea num.7.* to make the one ſide of your mold meet with the other.

You may caſt hollow, & light either in leade, pewter, or wax, if after you haue caſt your work ſolid, you powre out againe at the bottome thereof ſo much as will run, but the exact time when to powre out, muſt be gotten by often practiſe, and cannot well bee expreſſed in words.

39 You muſte haue a rowling pin of a foot long, made of 6, or 8 inches compaſſe, and the ſame taken

The rowling pin.



downe the thickneſſe of a ſhilling all the length ther-of, ſauing halfe an inch at either ende, whereby you cannot faile to make your paſt, al of one iuſt thicknes.

To mold the hand or face of a man.

40 In the foreſaide glewe you may molde ones hand, or face if the partie be firſte laide on his backe, with his eies plaſtered ouer, his noſe and eares ſtopt with wooll, and his mouth cloſed vp, ſauing that in the midſt he may draw breath by a little hole at a pipe or quil, and then ſet your ſides of lome, as before, a-bout his face, which ſome annoint ouer with oile (as before) and poure on the aforeſaide glue beeing but temperately warme. This is an excellent deuiſe to haue the liuely counterfeit of the true fauour & coun tenance of euery man.

The placing of your braunches.

41 Some doo hold it beſt to ſet your flowers and branches vpright, & not ouerthwart wiſe, with their tops vpwards, before you moulde them, for ſo they are perſwaded, that the leaues will ſpread abroad the better, and diuide themſelues in ſunder, whereby the mettal may run into euery leafe ſeuerally.

Killing of the beaſts.

42 Some doo kill Toades and frogs, which they meane to caſt, by leauing them in oyle till they die, and ſome do put ſtrong water into their mouthes. As for flies, ſpiders, graſhoppers, and ſuch like, you may keepe in cloſe boxes, and let them die for lack of aire, and then mold them whileſt they are ſtiffe.

To print graued patternes vpon paper.

43 If you would take but the print of any worke, grauen either in braſſe, wood, or other bodie. Firſt, with a ſpoonge lightly wet ouer your paper with fair water (ſome commend Allome water) then make a ſable colour with the fume of ſearing wax candle, in a ſpoon, porringer, &c, to the which put a few drops of ſallet oyle, or of the extracted oile of cloues, tem-

per

per the ſame wel together, and put it lightly vppon the ingraued patterne with a quilted leather, ſuch as Printers vſe, then clap the print vppon your paper lightly wet as before, and take off the paper, and you ſhall finde the impreſſion very faire, if you do it carefully. Note, that if your pattern be of wood, you muſt lay the ſame firſt a pretty while to ſoke in Water, before you lay on your ſable vpon it, becauſe the wood wil drie vp the colour exceedingly. Note alſo, that the ſmoke of tallow, maketh a good ſable, the ſmoke of roſen a better, but the ſmoke of wax giueth ỹ beſt of al other, and thereof is made that excellent veluet blacke, vſed in the art of Lymming.

44 It is a pleaſing and commendable practiſe, by this Art to mold of thoſe excellent counterfeites, of carued or emboſſed faces, dogges, Lions, Borders, Armes, &c, from toombes, or out of noble mens galleries: as alſo of pillers, balles, leaues, frutages, &c, therewith to garniſh beds, tables, court-cupboords, the Iawmes and mantletrees of chimnies, and other ſtately furnitures of chambers or galleries. But I may not diſcloſe the whole Art with euery circumſtance, whereby to make the ſame contemptible with the vulgar ſort: onelie I wil giue a taſte thereof vnto the ſharper wittes, who with ſome ſtudie, and practiſe, may reach vnto the ful perfection thereof. And therefore, whoſoeuer can firſt diſſolue Iſenglaſſe or fiſh g'ew, as it ought to be, and after harden the ſame by ſuch means, as that no ſudden moiſture can make it to relent or giue againe, the workeman and Artiſt whatſoeuer he be (and I am ſure there be ſome ſuch, though but verie few, that I know in England) may caſt many rare and excellent patternes, in the fine fi-

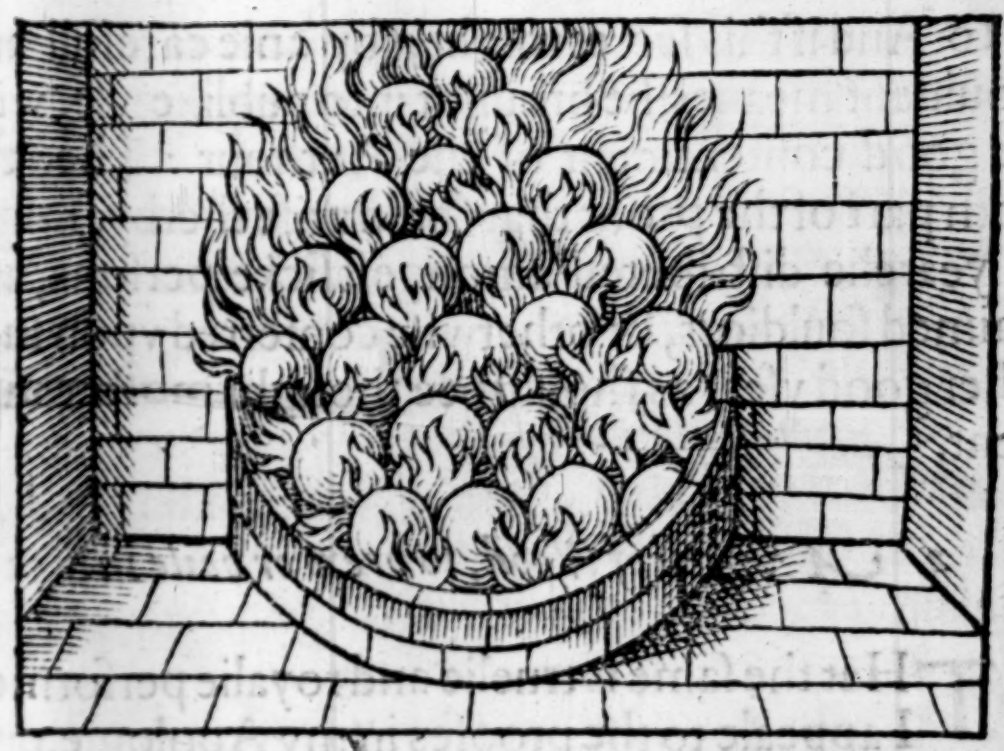
Speciall vſes of this Arte.

led or raped duſt of Braſill, box, Ieat, Amber, alebla-ſter, Ebonie, Elephants tooth, and ſuch like: beeing firſt well tempered with the glew ſo diſſolued, or with the pap of common paper, beeing wel wrought and laboured with the hande of a workeman. And hee may alſo make his moldes of the fineſt and whiteſt potters Clay, when they haue wrought and tempe-red it firſt in their manner. Of els if ſome excellent Caruer in wood or ſtone did carue ſome excellent peece of a border, of halfe a yard long, and a foot in breadth, with antique faces and perſonages, or other frutages thereon, and with the coatarmors of gentle-men, and other pleaſing deuiſes, to garniſh the ſame; the aforeſaid Artiſt, might thereby eaſilie and with ſmall coſt, caſt off whole borders for chambers or galleries, in the aforſaid ſubſtances or compoſitions, which would ſeeme to be of infinite charge. And for the better encouragement heerein, of thoſe that ſhal be doubtfull, and ſuſpitious of this skill, let this ſatiſ-fie them, that *I* haue ſeene not farre from London bridge, diuers excellent and carued patternes caſt off in ſand, and common glew, but they would endure no weather, yet they will ſerue ſuf-ficiently within doores ſo as they bee kept drie.

Here endeth the art *of Caſting.*

An offer of certaine new inuenti-ons, *which the Author will bee readie* to diſcloſe vpon reaſonable conſiderations, *to ſuch as ſhall be willing to entertaine* them, or to procure ſome Priui-ledge for them.

1. *A new kinde of fire.*



THis fire is of much leſſe charge the the ordinarie ſeacole fire.

2 It is much ſweeter in the burning, and more beautifull in ſhape, beeing made in the form of balles.

3 It is very dureable and laſting.

4 It is not ſo offenſiue either in ſmoke or cinder, as the ſeacole fire.

5 It wil employ many thouſands of maimed ſouldiers, and other poore and impotent perſons, in the making thereof.

6 It will rather bee a great furtherance than any hinderance vnto Newcaſtel men.

7 The matter wherewith the Seacole is both multiplied and ſweetened is verie plentifull, and cannot faile or grow deare, by the great expence thereof, if ſuch care be had therein as the Author wil diſcouer.

8 It will be an eſpeciall meanes to preſerue Timber for the building of ſhips, and other neceſſarie vſes.

9 It wil bring charcole and billets to a more reaſonable price.

10 And if this ſecret might, (by anie carefull and prouident meanes) be brought into publike vſe, with the good contentment of the Authour: Then the tenth part of the profit that ſhuld ariſe therby, might be yearelie diſtributed amongeſt ſicke perſons, and maimed ſouldiors, or otherwiſe conferred vpon ſuch other good vſes, as ſhould bee thought moſt conuenient.

2. *A veſſell of Wood, to brew or boile in.*

1 THat the ſame is truelie and royalie performed, I appeale to the proofes in my Apologie, publiſhed An. 1593. And if there be yet anie manner of perſon, that ſhall notwithſtanding my teſtimonies therein produced, either peruerſly hold the ſame to bee impoſſible, or maliciouſlie and ſlanderouſlie reprooue the inuention of vntruth; then let him wage ſuch a competent ſum of monie, as may counteruail the diſcouerie of the ſecret, and the Authour wil make a publike ſhew therof before anie indifferent Iudges. Where, if they ſhal vpon ſufficient trial had, cenſure againſt the Author: then he wil forthwith redouble the

the wager vnto ſuch offerer, and for euer heereafter forſweare the publiſhing of any ſuch woodden conceit againe to the world.

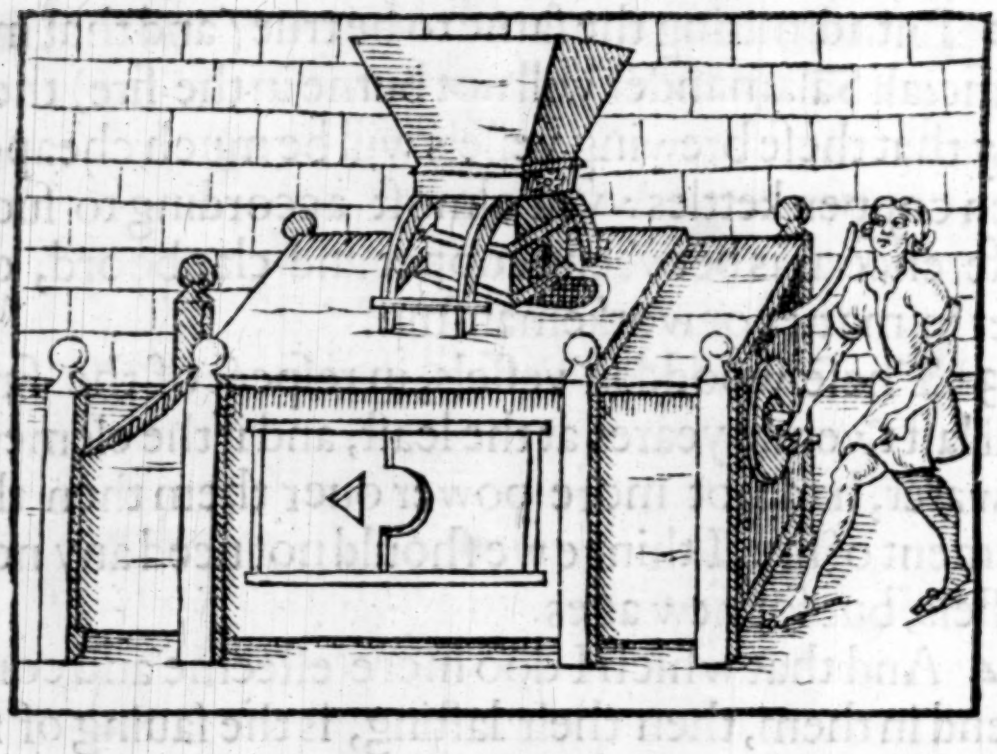
2 But admitting the ſame to be true (and that my artificiall Salamander will not burne in the fire) then I ſay that theſe brewing veſſels will be much cheaper then copper kettles: yea almoſt according to ſuch difference as is betweene copper and clapboord, either in matter or workemanſhip.

3 *T*heſe woodden veſſels, in reſpect of the fire, will laſt twentie yeares at the leaſt, and if the element of water, had not more power ouer them then the element of fire, I thinke we ſhould not need any new veſſels, but for new ages.

4 And that which I doo more eſteeme and commend in them, then their laſting, is the ſauing of fewel; which cannot be leſſe then a moity of that which is now vſuallie ſpent in the houſes of all the gentlemen and farmers of this land.

5 Theſe veſſels being once prepared by the Author, may afterwardes from time to time, with little labor and leſſe coſt, be repaired by the owners themſelues, with ſuch Art as ſhall be manifeſted vnto them vpon their firſt handſell.

A boulting Hutch.



1 THe price heereof is easie in respect of those good vses for which it serueth

2 This Engine auoideth al wast of meale and flower, and yet it deuideth the bran sufficiently from the flower.

3 It will bee a meanes to saue boulters, which is a matter of great charge vnto the Baker.

4 But the especiall vse thereof, is to auoid all that grose and vncleanlie manner of boulting which the Bakers for want of this engine are forced to vse, the particulers whereof appeere more at large in my Apologie.

5 All obiections that were made against this inuention, by the Bakers of the Citty of London, vpon the view thereof at my house, were sufficiently refelled by the *Author*, in the presence of diuers Cittizens of good worshippe and account, and therefore

what

what inconueniences ſoeuer ſhall hereafter either by them or by any other be pretented againſt the ſame, I would haue them holden for falſe and malicious.

6 This boulting huch is very dureable, neither wil it be chargeable in reparations to the owner.

4 *A portable pumpe.*



1 IT will be in price one of the cheapeſt pumps of all that I know or euer heard of, and wil require but ſmall reparations.

2 It is light in cariage and may be tranſported from place to place, by one ſingle man without any further helpe.

3 With the eaſie labour of one man, it will deliuer foure, fiue, or ſix tun of water euery hower, according as it is in bigneſſe, neither can a man poſſibly be wearie, though he ſhould worke fiue or ſixe houres together, without intermiſſion.

4 Being placed in a fit tub, that is bored ful of holes

or faſtened in the water to a peece of Timber, it is a very apt inſtrument for the dreining of the fen countries, or any other ſurrounded leauell, or ſtanding water, poole or pond, becauſe it is ſo portable, and needeth no faſtening at all on the grounde, as other pumpes doo.

5 It is alſo a verie conuenient pumpe, for all ſuch as dwel neere the riuer of Thames, to force vp water for the ſeruice of their kitchens, which may be performed in a moſt reaſonable manner.

6 It is not amiſſe, to haue two or three of them in ſtore, for the neceſſarie ſeruice of euery ſhippe in her fight, if any occaſion be offred to vſe them vpon any great or ſudden leak, they are but little, and require ſmall ſtoage.

5 *A wholeſome, laſting, and freſh victuall for the Nauie.*

1 WHen corne is ſold for twenty ſhillings ỹ quarter, then eight ounces thereof may be affoorded for a pennie, which is a competent meale for any reaſonable ſtomach, and ſerueth both for breade and meat.

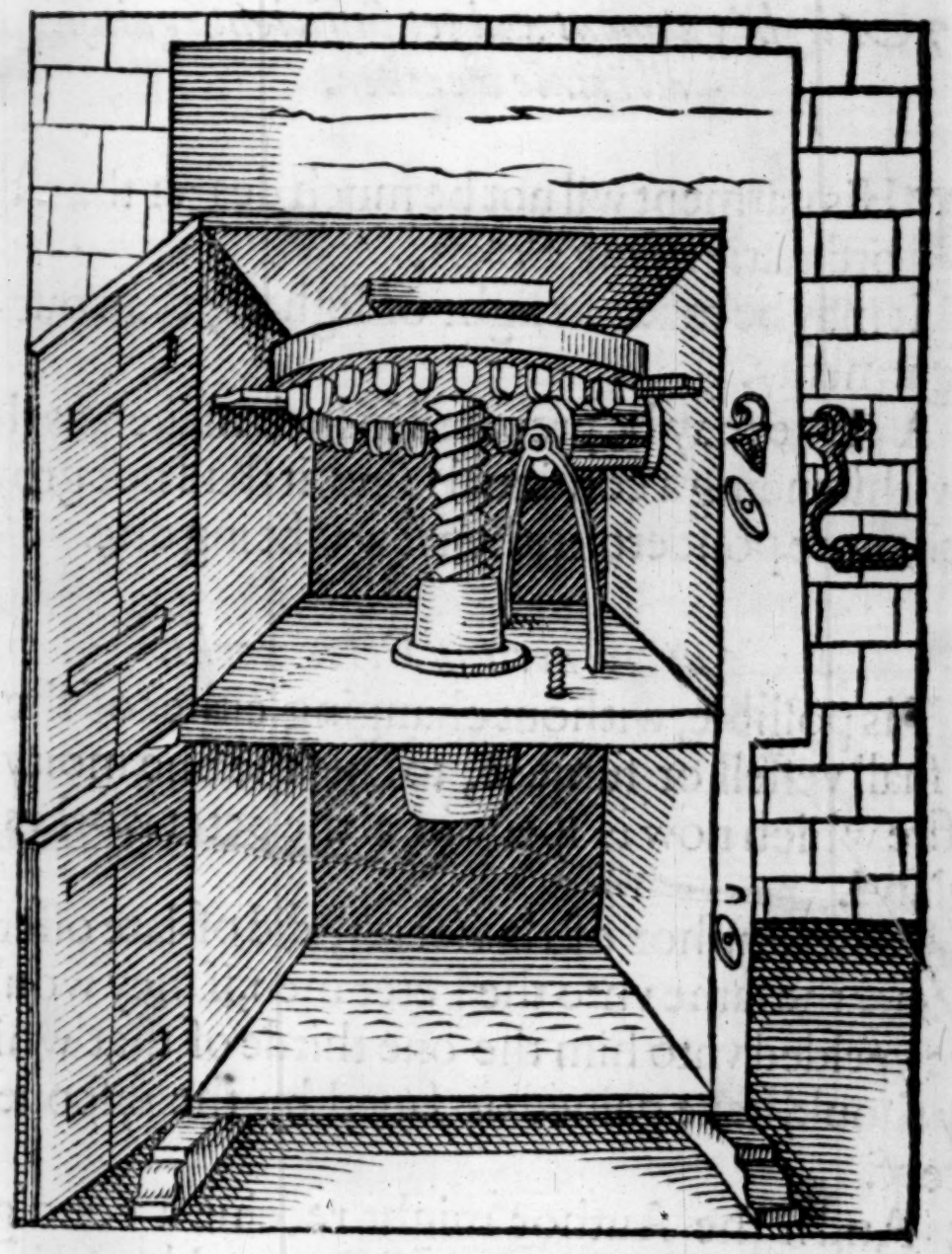
2 *It* is in ſhape like wafers, light of carriage, and will laſt two or three yeares ſound and ſweet, if it bee kept dry.

3 It may be vſed now & then, for change of diet.

4 Being carefully handled in the dreſſing (according to the Authors direction) it wil bee pleaſing enough to the Marriner, and I haue had the ſame ſundrie times ſerued in at mine owne table to the good contentment of my friends.

An

An Engin for the making of this victual.



6 A ſpeedie way for the inning of any breach.

1 I Thinke it poſſible by this deuiſe (hauing firſt prepared ſo many artificial ſtones as ſhal bee requiſite in this worke) in one monthes ſpace, to ſhut vp the great breach at Earith, and that in ſo ſtrong and defenſible a manner, as ſhal be ſufficient to withſtand al the rage and furie of thoſe ſurges that ſhall beate or break vpon it.

2 The charge of euery yard ſquare will bee much about fiue ſhillings.

3 It

3 It is a very dureable and lasting maner of work, and may be wrought in any time of the yeare.

7 A light garment and yet sufficient against all rainie weather.

1 THis garment wil not be much dearer than our ordinarie riding clokes.

2 It may be made as light or lighter, than our vsual garments.

3 A cloke may be prepared in such maner, as that notwithstanding a continual raine, it shall not growe much more ponderous, then it was being drie.

8 A new conceit in Peter works.

1 IT is possible, without changing either of the vsuall vessell or furnace, to saue the one moity of the fire which now is spent in al the peter workes of England.

2 The Author of this secret, did of late offer to discouer the same vnto the Peter men, if they woulde haue yeelded vnto him the one thirde of that which they should haue gained or saued by the discouerie thereof.

3 And if the Author might receiue a condigne reward for his profitable trauell, he would peraduenture find out a multiplyeng earth, which would yeeld sufficient store of Peter, for the seruice of this Realme without committing such offenses as are dayly offered, in the breaking vp of stables, barnes, sellers, &c.

Nec omnes nec omnia mihi placuere, cur ego omnibus?

Hugh Platte.

FINIS.

Joh. Georgii Grossii SS Theologiæ D

De
formandis orationibus oratoriis
Tractatus

In Libros quatuor tribus
quorum 1 in genere Didascalico 2
In Demonstrativo 3 Deliberativo
& quarto Judiciali

Templum Naturæ historicum
Henrici Kornmanni ex sirchaina chaldaicum
Jrguo de natura ~~quatuor~~ I & miracu
4 elementorum Ignis ~~Aqua~~ Aeris
aquæ Terræ ita diserituæ